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Ontario - Legislature Assembly

SESSIONAL PAPERS

VOL. LIV.—PART VI.

THIRD SESSION

OF THE

FIFTEENTH LEGISLATURE

OF THE

PROVINCE OF ONTARIO

SESSION 1922

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No. **2** Estimates—Supplementary, *re* Queenston-Chippawa Development. Presented to the Legislature, 3rd March, 1922. *Not Printed.* Supplementary Estimates for the service of the Province for the year ending 31st October, 1922. Presented to the Legislature, 16th March, 1922. *Printed.* Further Supplementary Estimates. Presented to the Legislature, 26th May, 1922. *Printed.* Estimates for the year ending 31st October, 1923. Presented to the Legislature, 31st May, 1922. *Printed.*

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No. **7** Report of the Inspector of Registry Offices for the year 1921. Presented to the Legislature, 6th April, 1922. *Printed.*

No. **8** Report of the Provincial Municipal Auditor for the year 1921. Presented to the Legislature, 29th May, 1922. *Printed.*

No. **9** Report of the Commissioners for Queen Victoria Niagara Falls Park for the year 1921. Presented to the Legislature, 9th June, 1922. *Printed.*

No. **10** Report of the Superintendents of Insurance for the year 1921. Presented to the Legislature, 6th April, 1922. *Printed.*

No. **11** Report of the Registrar of Friendly Societies' Transactions for the year 1921. Presented to the Legislature, 6th April, 1922. *Printed.*

No. **12** Report of the Registrar of Loan Corporations for the year 1921. Presented to the Legislature, 6th April, 1922. *Printed.*

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No. **15** Report on Highway Improvement for the year 1921. Presented to the Legislature, 30th May, 1922. *Printed.*

No. **16** Report of the Department of Labour for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **17** Report of the Minister of Education for the year 1921. Presented to the Legislature, 29th May, 1922. *Printed.*

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No. **22** Report upon the Ontario Hospitals for Insane, Feeble-minded and Epileptic for the year, 1921. Presented to the Legislature, 9th June, 1922. *Printed.*

No. **23** Report on Hospitals for Idiots. *Included in No. 22.*

No. **24** Report of Hydro-Electric Railway Commission. Presented to the Legislature, 24th February, 1922. *Printed.*

No. **25** Report upon Hospitals and Charitable Institutions for the year 1921. Presented to the Legislature, 9th June, 1922. *Printed.*

No. **26** Report upon the Prisons and Reformatories of the Province for the year 1921. Presented to the Legislature, 8th June, 1922. *Printed.*

No. **27** Report upon Neglected and Dependent Children for the year 1921. Presented to the Legislature, 8th June, 1922. *Not Printed.*

No. **28** Report upon the working of the Ontario Temperance Act for the year 1921. Presented to the Legislature, 8th June, 1922. *Printed.*

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No. **32** Report of the Agricultural and Experimental Union for the year 1921. Presented to the Legislature, 15th May, 1922. *Printed.*

No. **33** Report of the Stallion Enrolment Board. *Not presented.* (*Printed.*)

No. **34** Report of the Vegetable Growers Association for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **35** Report of the Corn Growers Association. *Not presented.*

No. **36** Report of the Entomological Society for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **37** Report of the Bee-Keepers Association for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **38** Report of the Dairymen's Association for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed. See Sessional vol. for* 1923.

No. **39** Report of the Live Stock Branch of the Department of Agriculture for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **40** Report of the Housing Commission. *Not presented.*

No. **41** Report of the Women's Institutes of the Province for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **42** Report of the Horticultural Societies for the year 1921. Presented to the Legislature, 1st June, 1922. *Printed.*

No. **63** An Agreement made on the Ninth day of February, one thousand nine hundred and twenty-two, between His Majesty, represented by the Honourable the Minister of Lands and Forests for the Province of Ontario, hereinafter called the Government, of the first part, and Lewis L. Alstead, Esquire, of the City of Milwaukee, in the State of Wisconsin, and George A. Seaman, Esquire, of the City of Chicago, in the State of Illinois, hereinafter called the Grantees, respecting a lease, or leases, of Water Power on Nipigon and Pic River. Presented to the Legislature, 8th March, 1922. *Not Printed.*

No. **64** Report of the Commission appointed to conduct an enquiry into the truth or falsity of charges relating to Toronto Police Court, etc. Presented to the Legislature, 14th March, 1922. *Not Printed.*

No. **65** Interim Report of the Public Service Commission respecting the Registry Office of the County of York. Presented to the Legislature, 16th March, 1922. *Printed.*

No. **66** Agreement in the matter of settlement of suits of the Shevlin-Clarke Company, Limited. Presented to the Legislature, 16th March, 1922. *Not Printed.*

No. **67** Report upon Blue Sky Legislation. Presented to the Legislature, 20th March, 1922. *Printed.*

No. **68** Statement on Distribution of Revised and Sessional Statutes. Presented to the Legislature, 21st March, 1922. *Not Printed.*

No. **69** Interim Report of the Public Service Commission, on the operation of Land Titles Act in Northern Ontario. Presented to the Legislature, 21st March, 1922. *Printed.*

No. **70** Report of the Commission to make inquiries and report upon all matters and things connected with or relative or incidental to the seizure on or about the 21st of April, 1920, of a car of whiskey at the City of Chatham, etc., etc. Presented to the Legislature, 22nd March, 1922. *Not Printed.*

No. **71** Return to an Order of the House of 15th March, 1922, That there be laid before this House a return of copies of all documents, maps, correspondence and papers dealing with the purchase, expropriation or acquiring of a certain property occupied as the Presbyterian Manse at the Village of Vernon, in the County of Carleton, at the Department of Highways, or any official thereof. Presented to the Legislature, 22nd March, 1922. *Mr. Ferguson. Not Printed.*

No. **72** Return to an Order of the House of 28th February, 1921, That there be laid before this house a Return showing:—1. All fines

and confiscations of property under The Game and Fisheries Act for each of the years 1916-17-18-19-20, imposed by game wardens, overseers or other representatives of the Department. 2. The number of such cases brought before a Magistrate of which there is any record for each year as above, and the numbers of recorded convictions. 3. The amounts for each year received by the Government and the amounts paid each year to informers. 4. Copies of instructions issued to game wardens, overseers or other representatives from time to time during the period 1912-20, dealing with the method of levying fines and directing seizure of property. Presented to the Legislature, 22nd March, 1922. *Mr. Hall. Not Printed.*

No. **73** Report of the Minimum Wage Board for the year 1921. Presented to the Legislature, 23rd March, 1922. *Printed.*

No. **74** Report of the Commission to investigate the Organization, Discipline, Administration and Efficiency of the Police Court of the City of Brantford. Presented to the Legislature, 5th April, 1922. *Not Printed.*

No. **75** Return to an Order of the House of Sixth of March, 1922, That there be laid before this House, a Return of copies of all correspondence and other documents between the Attorney-General's Department, the Ontario License Board, the Provincial Police Department, or Provincial Secretary's Department and any person or persons in Brantford having to do with the administration of justice for the City of Brantford or County of Brant since October 20th, 1919, to date. Presented to the Legislature, 7th April, 1922. *Mr. MacBride. Not Printed.*

No. **76** Return to an Order of the House of 30th April, 1921, That there be laid before the House a return of all copies of all correspondence between the Minister of Lands and Forests, the Prime Minister or any member of the Government, and E.W. Backus, or any other company, firms, or person, together with all estimates, reports, advertisements, conditions of sale, tenders, agreements, maps, documents and papers of every kind and nature relating to:—1. The Lake of the Woods pulp concession. 2. The White Dog Rapids Water Power, or any other water power in the District of Kenora. 3. The recent sale of pulp wood and timber on the English River concession. Presented to the Legislature, 10th April, 1922. *Mr. Ferguson. Not Printed.*

No. **77** Return to an Order of the House of 30th April, 1921, That there be laid before the House a Return of copies of all correspondence, papers, plans, reports and documents between the Minister of and the Federal Government and any Minister or official thereof, Highways, or any member of the Government or any official thereof,

with reference to contribution under The Canada Roads Act towards the construction of Highways in Ontario. Presented to the Legislature, 10th April, 1922. *Mr. Henry. Not Printed.*

No. **78** Return to an Order of the House of 10th March, 1922, That there be laid before this House, a return of copies of all correspondence between the Minister of Lands and Forests, the Prime Minister, the Attorney-General, or any Member of the Government and E. W. Backus or any person on his behalf or any other company, firm or person, together with all estimates, reports, advertisements, conditions of sale, tenders, agreements, maps, documents, memoranda and papers of every kind and nature relating to (1) The Lake of the Woods pulp concession; (2) The White Dog Rapids water power or any other water power in Ontario; (3) The English River Pulp concession; (4) The Keewatin Lumber Company; (5) The Keewatin Power Company. Presented to the Legislature, 18th April, 1922. *Mr. Ferguson. Not Printed.*

No. **79** Report of the Public Service Superannuation Board for the year 1921. Presented to the Legislature, 19th April, 1922. *Printed.*

No. **80** Regulations of the Provincial Board of Health for sanitary control of Lumber, Timber and Mining Camps. Presented to the Legislature, 19th April, 1922. *Printed for distribution.*

No. **81** Return to an Order of the House of 29th March, 1921, That there be laid before the House a Return showing: 1. What is the number of applications to the Board of License Commissioners, or any Commissioner, Official or Minister for the remission of fines or sentences under the O.T.A. in regard to which the member for South-East Toronto (Seat "B") acted personally or was interested professionally. 2. (*a*) What is the number of such applications favourably considered; (*b*) Rejected. 3. (*a*) What is the total sum of fines under the O.T.A. remitted in regard to which the member for South-East Toronto (Seat "B") acted personally or was interested professionally; (*b*) What is the aggregate number of fines remitted from sentences imposed under the O.T.A. in regard to which the member for South-East Toronto (Seat "B") acted personally or was interested professionally Presented to the Legislature, 19th April, 1922. *Mr. Pinard. Not Printed.*

No. **82** Copy of Commission issued to Walter Dymond Gregory, *et al* to inquire into and report upon the estimates and other matters relating to the Queenston-Chippawa Power Development in pursuance of Order-in-Council, dated 13th April, 1922, thereto annexed. Presented to the Legislature, 19th April, 1922. *Not Printed.*

No. **83** Return to an Order of the House of 29th April, 1921, That there be laid before this House, a Return of the Report of the officer, or person, who has been conducting a scale of the logs and mill-cut

at twenty-six lumber mills of Ontario throughout the sawing season of 1920, and which the Minister of Lands and Forests has reported to the House is now in his possession, together with the data on which the Report was based and all correspondence in connection therewith. Presented to the Legislature, 20th April, 1922. *Mr. McCrea. Not Printed.*

No. **84** Return to an Order of the House of 21st April, 1922, That there be laid before this House, a Return showing how many timber limits have been offered for sale since December 1st, 1919, and where situated. 2. Were they all sold by tender. 3. How long was each sale advertised. 4. The date of sale, area and price paid. 5. How many tenders were received in each case. 6. The name of the successful tenderer. Presented to the Legislature. 24th April, 1922. *Mr. McCrea. Not Printed.*

No. **85** Report and Statement of the Ontario Athletic Commission and of Auditor, for the year 1921. Presented to the Legislature, 25th April, 1922. *Not Printed.*

No. **86** Return to an Order of the House of 26th April, 1922, That there be laid before this House, a return showing the quantity of timber removed by the Keewatin Lumber Company in the District of Kenora each year during its cutting operations upon Berths S2, S3, S4, 3, 4, 6, 7, 10, 12, G9 and G10, 21 and 20. Presented to the Legislature, 28th April, 1922. *Mr. Mathieu. Not Printed.*

No. **87** Return to an Order of the House of 15th March, 1922, That there be laid before this House a Return of copies of all letters, telegrams or other correspondence during the year 1921, between any Minister of the Government or of any Member or Officer of the Ontario License Commission with any person or Corporation relating to the charges laid against Constable Lefevre, Provincial Police Force, and Constables Fleming, McKenzie and Michaud, the North Bay Police Force. Presented to the Legislature, 28th April, 1922. *Mr. Stover. Not Printed.*

No. **88** Return to an Order of the House of April 29th, 1921. That there be laid before this House, a return of copies of all Correspondence between R. T. Harding and the Honourable the Attorney-General, or any other Minister of the Crown, or any Officer of the Government since March 1st, 1921, with reference to a certain account for $500 rendered James Hourigan & Co. by the said R. T. Harding, and also copies of all letters from Crown Timber Agent Wylie since 1st June, 1920, referring to the settlement with James Hourigan & Co. for $12,600. Presented to the Legislature, 1st May, 1922. *Mr. Hill. Not Printed.*

No. **89** Report of the Mothers' Allowances Commission for the year 1921. Presented to the Legislature, 3rd May, 1922. *Printed.*

No. **90** Return to an order of the House of 12th April, 1922. That there be laid before this House, a Return of all copies of all correspondence, memoranda and reports between the Toronto and Hamilton Highway Commission and the Minister of Public Works or any member of the Government since November 15th, 1919. Presented to the Legislature, 11th May, 1922. *Mr. Henry. Not Printed.*

No. **91** Report of the Ontario Civil Service Commissioner for the year 1921. Presented to the Legislature, 12th May, 1922. *Printed.*

No. **92** Statement showing sums credited to The Highway Improvement Fund and all payments chargeable thereto as of October 31st, 1921. Presented to the Legislature, 12th May, 1922. *Not Printed.*

No. **93** Report of the Soldiers' Aid Commission of Ontario for the year 1921. Presented to the Legislature, 16th May, 1922. *Not Printed.*

No. **94** Statements showing all sums credited to the Highway Improvement Fund and all payments chargeable thereto for the fiscal years ending October 31st, 1920, and 1921, respectively. Presented to the Legislature, 23rd May, 1922. *Not Printed.*

No. **95** Return to an Order of the House of 9th February, 1921, That there be laid before this House, a Return of copies of all letters of instruction or other correspondence from the Attorney-General or any of the members of the Government, or Officials, addressed to any Police Magistrates or Crown Attorneys in the Province of Ontario; and any communications or letters in reply thereto relating to the imposition of penalties, or the trial of cases, and their disposition under The Ontario Temperance Act and amendments thereto. Presented to the Legislature, 30th May, 1922. *Mr. Dewart. Not Printed.*

No. **96** Return to an Order of the House of 25th May, 1922, that there be laid before this House, a Return showing (1) What Legislative Grants were earned in each of the years 1920 and 1921 by (*a*) Rural Public Schools, (*b*) Rural Separate Schools, (2) What was the actual amount paid to each Rural Public and Separate School for the said years. Presented to the Legislature, 6th June, 1922. *Mr. Cooke. Printed.*

No. **97** Report of the Agricultural Development Board for the year 1921. Presented to the Legislature, 8th June, 1922. *Not Printed.*

No. **98** Copies of Order-in-Council designating, pursuant to section 14 of the Hospitals and Charitable Institutions Act, Hospitals, Refuges, Orphanages and Infants' Homes to which aid may be granted. Presented to the Legislature, 8th June, 1922. *Not Printed.*

No. **99**	Return to an Order of the House of 29th April, 1921, That there be laid before this House, a Return of copies of all correspondence, reports and documents, relating to the dismissal of Magistrate Hastings, of Dunnville. Presented to the Legislature, 9th June, 1922. *Mr. Price. Not Printed.*
No. **100**	Return to an Order of the House of the 20th March, 1922, that there be laid before the House a Return of copies of all correspondence between any Minister of the Crown and any member of the Hydro-Radial Commission in connection and dealing with accounts for remuneration of services by each and every member of the Commission whether such accounts were paid in full for the amount claimed or reduced in amount. Presented to the Legislature, 9th June, 1922. *Mr. Hay. Not printed.*
No. **101**	Return to an Order of the House of the 24th February, 1922, that there be laid before the House a Return of all papers, documents, memoranda, recommendations, letters, telegrams and communications of every kind between any Municipal corporations, associations, bodies or persons and the Prime Minister or any Minister of the Government regarding the appointment or suggestion to appoint Peter Heenan, M.P.P. for Kenora, a Member of the Hydro-Electric Power Commission of Ontario. Presented to the Legislature, 9th June, 1922. *Mr. Thompson. Not Printed.*

Ontario Department of Agriculture

REPORT

OF THE

Minister of Agriculture

PROVINCE OF ONTARIO

FOR THE YEAR ENDING
OCTOBER 31, 1921

PRINTED BY ORDER OF
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REPORT

OF THE

Minister of Agriculture

1921

To His Honour COLONEL HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR,

I have the honour to submit the annual report of the Department of Agriculture for the year ending October 31st, 1921.

In the following pages will be found a brief review of the work carried on under the different branches of the Department during the past year. In addition, however, to these varied and extensive activities, I would like to refer to important developments which have taken place in reference to two of the subjects, namely, Co-operative Marketing, and Rural Credits.

COMMODITY CO-OPERATION.

During the past year the Niagara Peninsula Growers, Limited, has come into existence, and the Department has taken an active part in bringing this about. For years there has been some sentiment in the Niagara District in favour of a central selling organization for the marketing of the tender fruits grown so extensively in that section. In view of the unsatisfactory market conditions which prevailed throughout the season of 1920, the Department called together a number of representative growers at the end of the season to discuss the situation. The concensus of opinion was that a central marketing organization would aid materially in bringing about a better distribution of the fruit grown in the district, and thereby materially benefit the industry. Several other meetings were held, and the leaders in the industry finally decided definitely to undertake such an organization and, when local men were organized, it was found that many hundred growers were ready to sign contracts for the marketing of their products through an organization. Satisfactory arrangements were made by which the small local organizations which had been operating in the past should make way for the larger central selling organization, and even though handicapped by a late start and confronted by peculiarly difficult problems, the new organization has had a satisfactory season. It is not possible, however, to judge such an enterprise by the operations of one or two years. It usually takes from three to five years to get properly established, and in many cases contracts at the outset have been signed up for five years. I am particularly gratified, however, to see the producers organizing their co-operative marketing efforts on a commodity basis. I believe this basis is sound and, with proper management, there is no reason why it should not work out satisfactorily in this Province as it has done in other places. I believe there is scope in Ontario to apply the principle of commodity co-operation to several other commodities in addition to those which are already

working under this plan, and it will be my purpose to encourage and assist such organizations to the fullest power of the Department while at the same time leaving to such organizations the complete control of the management of their own affairs. The big point in favour of such an organization is that it gives the producer the fullest possible control of the marketing of his product. In the last analysis the producer is the one most vitally interested in the marketing of the products which he produces, and if he can secure a larger percentage of what the consumer pays, I feel it will be of economic advantage to the country as a whole, even though it may be to the disadvantage of the speculator. It is important, however, that the producer be given the fullest amount of authority in his own organization, and for this reason, any assistance which the Department may render will necessarily be confined to the preliminary stages of organization. I look for marked increase of interest and action along these lines in the immediate future.

Rural Credits.

As to rural credits I may point out that this is a subject which has, in varying degrees, been before the public for many years. The records of the Legislature show that all political parties have endorsed the general principle, although none have presented any definite detailed plan for the putting into effect of such general principles. Accordingly, soon after accepting my present position, I secured the appointment of a committee to thoroughly study what had been accomplished in other places in providing further financial facilities for agricultural development. Following the report of this committee, I had the honour to submit three Bills dealing with the subject to the Legislature at the last Session, and these measures were enacted into law.

The question of credit resolves itself into two parts, one as to long term and the other as to short term. In regard to the long term, the legislation provides a simple direct system of loans. Administrative machinery, known as the Agricultural Development Board, is provided for in the Act, and the Board is empowered to issue bonds and debentures, and to use the money thereby raised to make loans for certain specific purposes, such as purchase of land and the erection of buildings. It is intended that these bonds and debentures will be purchased by the Province, but as the Board will have first mortgages on land to offset the amount so raised, no risk will be incurred by the Province from this standpoint. Money will be loaned up to 65% of the value of the property offered as security, which is a considerably higher percentage than is provided for in loaning schemes of other provinces or countries. Repayments are to be spread over a period of twenty years with equal annual instalments of principal and interest. It is expected, therefore, that this measure will assist the plans of young men, tenants, or others who desire to become farm owners. In view of the vast amounts which have been invested in Victory Bonds and similar forms of security, it is becoming increasingly difficult to secure money for farm loans, and it is hoped by this legislation to provide a source of supply, and at the same time, stabilize interest.

Short Term Loans.

In the matter of short term loans it was not possible to work out any simple direct province-wide scheme. Short term accommodation necessarily contemplates taking the individual into consideration to a considerable extent, and this

cannot be done from any central office. Consequently, it was provided that local associations should be formed, and in this way a co-operative system established by which the persons interested could help one another. The plan provided under the legislation requires a minimum membership of thirty, each member to subscribe for one share of stock in the association, paying 10% or $10. Stock to one-half the amount subscribed by individual members is to be subscribed by the township municipality and by the Provincial Government. This capital is to represent a sort of reserve. A board of directors is to be appointed by the stockholders, and all loans must be passed upon and recommended by this board of directors. Loans may be passed for almost any farm operating charges up to a a total of $1,000. Recommendations passed upon by the board are forwarded to the central administrating office, and cheques are to be promptly returned. Repayments are to be made at the end of the calendar year in which the loans are granted, but may be renewed if the purpose of the loan has not been fully accomplished. On behalf of this scheme it is claimed that it constitutes an alternative system adapted to agricultural needs and conditions, and can readily be taken advantage of by any group of farmers whose credit needs are not being properly met.

Taking Deposits.

The other measure, introduced as part of this general plan, authorized the treasurer to accept deposits and open offices for this purpose. It was provided that this Act should come into effect by proclamation, and it has since been decided to bring it into effect. It is proposed to open savings offices at various points in the Province at which deposits will be accepted for any amount from $1 up and, on this, interest, at the rate of 4%, will be payable. In this way it is felt that encouragement is being given to thrift, and at the same time, the people of the Province will provide the money necessary for agricultural development and other needs. There is a large scope for development along these lines without detrimentally affecting existing institutions. The money placed on deposit at these offices will be available, under the legislation, only for investment in bonds and debentures of, or guaranteed by, the Government, and hence, it is absolutely safe. The Province is not attempting to go into anything in the nature of a regular banking business, the making short term loans or anything of that character. It is proposed merely to encourage the thrift of the people and facilitate provincial financing on proper and necessary lines.

Administration.

In the administration of this work, the granting and supervision of loans will be under the Agricultural Development Board, which is under this Department. The chairman of the Board will be the chief administrative officer, and the two other members required by the Act will serve only in an advisory capacity. In thus providing for the administration of both long term and short term loans, the work has been simplified and economy made possible as compared with other systems which come under the administration of two separate organizations. Initial appointments have now been made and as the fiscal year closes, the machinery is ready for the granting of loans under the legislation of last Session.

The branches for deposits will be administered under the Provincial Treasurer.

FEDERAL AID.

Acknowledgment is made of the continued assistance received by the Province under the Federal Agricultural Instruction Act. The monies received by this Province during the past year were apportioned under the agreement as follows:

Agricultural Colleges and Schools:		
1. Ontario Agricultural College:		
Salaries and expenses, additions to staff, maintenance....		$10,000 00
2. Agricultural School and Farm:		
(*a*) Capital expenditure	$73,000	
(*b*) Administrative and teaching staff, maintenance, purchase of stock, machinery, repairs, services, expenses and equipment.....	31,000	104,000 00
Instruction and Demonstration:		
3. Agricultural Representatives		135,000 00
4. Extension work in household science in rural communities.....		1,303 26
5. Co-operation and markets, investigation of marketing conditions for Ontario crops, educational work in connection with the marketing of farm products, including organization of co-operative societies		3,000 00
6. Demonstrations in connection with vegetable growing.....		10,000 00
7. O.A.C. short courses for winners of Acre Profit and Live Stock competitions, including travelling and living expenses.....		2,500 00
8. Women's Institute work, including courses in cooking, sewing, etc.		3,000 00
9. Short courses for Fall Fair and field crop judges, including travelling and living expenses.....		5,000 00
10. Lectures on horticulture.....		500 00
11. Educational work in connection with growing and handling fruit		3,000 00
12. Demonstrations with vegetable and hardy fruits in New Ontario		6,000 00
13. Demonstration work on soils.....		7,500 00
14. Beekeeping		1,000 00
15. Drainage work		4,500 00
Elementary Agricultural Education:		
16. To provide for and to encourage the teaching of agriculture, manual training as applied to work on the farm, and domestic science in high, public, separate and continuation schools, and in universities, to be available for grants, services, expenses and equipment, and travelling and living expenses of teachers, inspectors, and others in attendance at short courses or other educational gatherings, and to be paid out on the recommendation of the Department of Education.....		40,000 00
		$336,303 26

This grant constitutes a very substantial and useful addition to the provincial appropriation, and the work carried on is reviewed under the different branches to which it is allotted.

All of which is respectfully submitted.

MANNING W. DOHERTY,
Minister of Agriculture.

Toronto, 1922.

ONTARIO AGRICULTURAL COLLEGE

Following are the figures showing the attendance in each course held during the year:—

(Figures for general courses include students of winter term and new students of fall term.)

General Course	631	
Specialists in General Course Work	6	
Manual Training (One Year Normal Course)	3	
Dairy Courses	191	
Stock and Seed Judging	165	
Poultry Raising	34	
Horticulture	69	
Apiculture	71	
Drainage and Drainage Surveying	11	
Farm Power	160	
		1,341
Domestic Science (at Macdonald Institute)		366
Summer Courses:—		
High School Teachers—1st year, 41, 2nd year, 23	64	
Public School Teachers—1st year, 221, 2nd year, 125	346	
School for Rural Leadership	137	
Farm Mechanics	7	
High School Teachers (3rd year Specialists)	7	
		561
Total		2,268

ANALYSIS OF COLLEGE ROLL (GENERAL COURSE), 1921

From Ontario.

Algoma	1	Kent	7	Prescott	6
Brant	12	Lambton	10	Prince Edward	3
Bruce	11	Lanark	12	Rainy River	1
Carleton	50	Leeds	8	Renfrew	6
Dufferin	2	Lennox & Addington	2	Russell	3
Dundas	4	Lincoln	22	Simcoe	14
Durham	6	Middlesex	20	Stormont	1
Elgin	6	Muskoka	8	Timiskaming	3
Essex	12	Nipissing	4	Thunder Bay	4
Frontenac	10	Norfolk	10	Victoria	2
Glengarry	8	Northumberland	3	Waterloo	11
Grenville	5	Ontario	11	Welland	5
Grey	9	Oxford	19	Wellington	45
Haldimand	12	Parry Sound	2	Wentworth	16
Halton	12	Peel	6	York	67
Hastings	6	Peterborough	4		
Huron	9	Perth	19	Total from Ontario	529

From Other Provinces of the Dominion.

Alberta	10	Nova Scotia	21	Saskatchewan	7
British Columbia	24	Quebec	1		
New Brunswick	10	Prince Edward Island	3	Total from other Provinces	76

From Other Countries.

Bermuda	1	Scotland	1	U.S.A.	6
England	11	South Africa	1	U.S. of Columbia	2
Japan	1	Switzerland	1		
New Zealand	1	Trinidad	1	Total from other Countries	26

Age and Religious Denominations.

The limits of age in the General Course, 1921, ranged from 18 to 40 years.

The average age was 22.

Religious denominations of students registered for the fall term were:—

Religious denominations of students registered for the fall term were:

Anglican	131	Disciples of Christ	5	Methodist	17
Baptist	46	Evangelical	2	No Religion	
Brethren	1	Friends	4	Presbyterian	21
Christadelphian	3	Lutheran	7	Roman Catholic	2
Congregational	10	Mennonite	2	Unitarian	

LIVE STOCK

In the Live Stock Department one of the most gratifying incidents of the year was the standing of the College judging team at the Chicago International Judging Competition. Among 21 colleges, the O.A.C. team stood second, being only 32 points behind the winners. One of the O.A.C. students was high man with a score of 891 out of a possible thousand, and another 5th with a score of 876.

The College equipment in live stock was strengthened. The dairy herd was increased by 10 Holstein females and a Holstein herd sire, by four Ayrshire females and three Jersey females. The dairy herd now consists of 48 head of Holsteins, 19 Ayrshires and 10 Jerseys. Without making any attempt for great records, the mature cows in the Holstein herd averaged 15,230 pounds of milk for the year, some of them exceeding 18,000 pounds. Two young bulls sold at the sale won in their respective classes at the Winter Fair at Guelph.

In regard to sheep, the Shropshire flock has been strengthened by the use of an outstanding, imported ram, and the Leicester flock has been built up in the same way.

Investigational work is now in progress dealing with the cost of maintenance of beef cows over winter also to ascertain the cost of maintenance of herd bulls.

Work with swine has been greatly facilitated by the new piggery, which was used for the first time during the year. An effort is being made to conform to the new bacon hog standards in the breeding of Yorkshires, Tamworths and Berkshires, and the usual important feeding investigations are being carried on.

Stock Sale.

Last year no College sale was held and the surplus stock was sold privately. This year a return to the auction system was made and, notwithstanding the fact that prices have dropped and demand has slackened, a satisfactory sale was made. The following is a summary of the sale:—

7 Shorthorns	sold for	.....	$2,965 00
4 Grade Herefords	" "	.....	315 00
4 Fat cattle	" "	.....	494 00
11 Dairy bull calves	" "	.....	855 00
29 Lambs	" "	.....	375 00
64 Pigs	" "	.....	2,102 50
Total		.....	$7,106 50

Buyers were present from all parts of the Province and some from the United States. The 118 lots were sold in three hours. Bidding was brisk and prices, considering the times, good.

FIELD HUSBANDRY.

In 1921, there were 116 definite experiments with farm crops conducted in the trial grounds at the College. Some of these were conducted for the first time, while others were started more than a quarter of a century ago and have been continued throughout the whole period.

It is exceedingly important for the farmers of Ontario to keep prominently before them some of the outstanding varieties of farm crops as determined by many experiments conducted at the Ontario Agricultural College. Some of these varieties have been grown in Ontario for a considerable length of time, others have been imported, an occasional one has been started from an individual plant, and a few have originated at the College through hybridization. Some of these leading varieties are as follows:—

Winter Wheat	O.A.C. No. 104, and Dawson's Golden Chaff.
Spring Wheat	Marquis and Wild Goose.
Spring Rye	O.A.C. No. 61.
Winter Rye	Petkus, and Rosen.
Oats	O.A.C. No. 72, Banner, and O.A.C. No. 3.
Barley	O.A.C. No. 21.
Emmer	Common.
Buckwheat	Rye.
Field Peas	Potter, Arthur, and Canadian Beauty.
Beans	Pearce's Improved Tree and O.A.C. No. 181.
Soy Beans	O.A.C. No. 81.
Vetches	Hairy.
Dent Corn	White Cap Yellow, Golden Glow and Wisconsin No. 7.
Flint Corn	Longfellow, and Gold Nugget.
Sweet Corn	Golden Bantam.
Sorghum	Early Amber.
Sunflowers	Black Giant, and Mammoth Russian.
Mangels	O.A.C. No. 1 strain, and O.A.C. No. 2 strain of Yellow Leviathan.
Swede Turnips	Good Luck, and Hall's Westbury.
Millet	Japanese Panicle.
Pasture Rape	Dwarf Essex.
Cow Cabbage	Sutton's Earliest Drumhead.
Very Early Potatoes	Stray Beauty.
Medium Early Potatoes	Irish Cobbler.
Late Potatoes	Green Mountain, Dooley and Empire State.
Alfalfa	Grimm, and Ontario Variegated.
Sweet Clover	White Blossomed biennial, Yellow Blossomed biennial, and Hubam.
Grasses	Tall Oat, Orchard, and Meadow or Tall Fescue.

Different Classes of Farm Crops.

In each of the past seven years, a number of different classes of farm crops were tested in duplicate under similar conditions of soil and climate. Only prominent varieties were used in this test. The object, however, has not been the comparison of varieties but rather to secure definite information regarding the relative productiveness of the different classes of farm crops. The following table gives the average of the seven years, tests in average yield of both straw and grain per acre:—

Classes and Varieties.	Yield of straw per acre (tons)	Yield of grain per acre (lbs.)
O.A.C. No. 21 barley	1.80	2,641
O.A.C. No. 72 oats	1.97	2,557
Common emmer	2.07	2,284
Guy Mayle hull-less barley	1.67	2,227
Early Britain peas	1.52	1,918
O.A.C. No. 61 rye	2.37	1,782
Wild Goose spring wheat	2.18	1,739
Red Fife spring wheat	2.22	1,666

It will therefore be seen that the O.A.C. No. 21 barley gave an average annual yield of nearly one thousand pounds of grain per acre more than the Red Fife spring wheat when grown under similar conditions. This experiment bears out other experiments which have been conducted at the College, in showing that barley, in nearly all cases, gives a greater yield in pounds of grain per acre than oats.

The results of experiments conducted at the College over a number of years have shown that a combination of the best variety of oats and the best variety of barley grown together in the right proportion will produce on the average over 200 pounds of grain per acre more than either one grown separately.

In an experiment conducted in each of the past four years, the results show that oats and barley grown together produce a greater yield than when this combination has received in addition Goose wheat, Golden Vine peas, or Common flax, in amounts of one peck, two, three, or four pecks. Not only was this true in the average of four years, but it was true in each of the years with three slight exceptions in 1918. It is important to grow together two varieties of grain which will ripen at the same time, such for instance, as the O.A.C. No. 21 barley and the O.A.C. No. 3 oats. These when combined at the rate of one bushel of each by weight makes a combination which is difficult to surpass in high productive power.

Varieties of Sweet Clover.

Bulletin No. 283 on "Sweet Clover as a Farm Crop" and consisting of 32 pages was issued within the past year. There is probably no crop which has a more interesting record than that of the biennial sweet clover which has been converted from a roadside plant to a farm crop in a comparatively short time. Interest is now more particularly focusing on what is known as the White Flowering Annual or Hubam sweet clover. Previous to 1921, this crop was grown entirely for seed production. Other than a few preliminary observations, there was apparently no recorded result of any experiment with Hubam sweet clover conducted in America previous to this year. Six distinct experiments with the

Hubam sweet clover were conducted at our College in the past season. One of the experiments included the testing of both the annual and the biennial White Flowering sweet clover and the annual and the biennial Yellow Flowering sweet clover when sown at the same time in the spring and without the use of a nurse crop in any instance. The results of duplicate tests show that the Hubam sweet clover produced an earlier crop but a lighter yield of hay per acre than the biennial White Flowering variety. Experiments conducted at Washington, D.C., and in Michigan seemed to correspond closely with our own, namely, that, when treated in exactly the same way, the White Flowering annual sweet clover will produce a crop of hay in a shorter length of time but that the yield of hay produced by the biennial White Flowering sweet clover is about fifty per cent. greater than that of the annual in the same year that the seed was sown. The annual, of course, will die in the autumn and the biennial variety will survive the winter and furnish crops in the year following. It looks as if the annual White Flowering sweet clover may have a place for certain specific purposes in Ontario but not equal to some of the extravagant claims made by some of those who are desirous of selling seed at a particularly high price.

Sunflowers as a Farm Crop.

In the spring of 1921, circular No. 35 on "Sunflowers as a Farm Crop" was issued by this department. Three varieties of sunflowers have been under test in the Field Husbandry Department in each of twenty-five years. The average for the whole period in tons of green crop per acre per annum has been 20.3 for the Black Giant, 16.6 for the Mammoth Russian, and 15.1 for the White Beauty. In average yield of seed per acre for twenty-two years, the results have been—Black Giant 1,623 pounds, Mammoth Russian 1,435 pounds, and White Beauty 1,607 pounds. In each of two years, sunflowers were placed in the silo and the sunflower silage was used for feeding to the farm cattle. It was eaten very well by the cattle but did not seem to be relished quite as well as the silage made from corn.

It is quite likely sunflowers will be used as a silage crop in some parts of Ontario, especially in those localities where corn cannot be grown satisfactorily owing to trouble from early and late frosts, particularly in the northern districts and in places of high altitude and of adverse soil conditions. It is interesting to note that in the tests made with different crops by our Entomological Department in Elgin County in the past season, in no instance were any of the plants of three different seedings of sunflowers infested with the European Corn Borer. In the United States, the sunflower has been infested by the European Corn Borer to only a very slight extent.

POULTRY HUSBANDRY.

The work of the Department this year has been exceptionally heavy. Never has there been so much interest shown, generally, in poultry production, nor has there been a year when the teaching, poultry extension, and the general management of the Department have been more difficult. More students have been given practical instructions, there has been more demand for outside demonstrations, and more chickens have been hatched and reared than in any previous year.

To supply the demand for work in the field would require a large number of workers. It would appear that for a few years at least a poultry expert could be kept busy in every three or four counties, and possibly in every county. De-

monstrations in culling hens have been given and general advice in poultry matters wherever possible, but not nearly all the requests have been met. There were between two and three thousand people present at these meetings. Large meetings are difficult to handle; or where one is trying to demonstrate the difference between a high and low laying hen and then have the people try out the methods, a small meeting of twenty people is more desirable than a large number. There were about thirty thousand hens examined of which nearly one-third were culls.

There are now one hundred and eighty breeding stations in the various counties. These flocks are carefully culled each year. Two breeding stations were closed during the year. Six hundred and sixty Barred Rock males have been sent out to these stations.

Numerous meetings were held at local Poultry Associations and other gatherings.

There were one thousand Plymouth Rock and White Leghorn pullets used in experimental work on the plant this year. These were maintained largely for studying dates of hatching in regard to the number of eggs produced, together with the problem of inheritance of egg production. The pullets were put in laying pens at an age of between six and seven months. All were trap-nested. The average number of eggs produced from the time they were placed in the pen for twelve consecutive months was a trifle over one hundred and seventy-nine eggs each. This is a higher average than in any previous year. Two birds of this number laid three hundred or more eggs each in twelve consecutive months.

For a number of years electric lights have been used experimentally on laying pullets. This year the light was turned on at 4.00 a.m., commencing November 1st and was discontinued in May. In other years there was some trouble with the birds moulting when the lights were discontinued but this year this trouble was avoided, largely by using the light until such time as the daylight was equal to the morning artificial light.

The results each year indicate that at least twenty-five percentage increased production may be expected during the short days. The general average production for the year does not show much increase of the birds in unlighted pens; or in other words, the increased production during the winter is followed by a decreased number in the spring when eggs are at the lowest price.

More chicks were hatched and reared this season than ever. The eggs hatched better and there was less mortality among the chicks and, further, there were more students operating incubators: hence all these conditions produced a very large number of birds.

There is a possibility that the increased hatch was partially due to careful feeding of tender green feed and a small amount of liver; at least we got good hatches from the very highest laying pens of pullets when so treated.

Some progress is made each year along the lines of isolation of individual hens that are not only good egg producers but are equally good breeders. This year we have found more hens with the above characters than in any previous year. There have also been located a number of males of good breeding records. The breeding work is now in such a condition that it should be possible to isolate several very good families, providing there is sufficient labor and feed to carry on.

To pedigree nine thousand chicks and keep all the records required is no small task.

BACTERIOLOGICAL DEPARTMENT.

A total of 4,202 cultures of legume bacteria for seed inoculation were prepared and sent out as follows:—

Sweet Clover, 1,501; Alfalfa, 1,363; Red Clover, 658; Peas, 375; Alsike, 208; Vetch, 38; Soy bean, 26; Sweet pea, 24; Beans, 9.

A total of 94 lactic starters and 13 Bulgaricus cultures were sent to creameries, cheese factories and other applicants.

A number of diseases and abnormal conditions of plants and animals were found in specimens submitted to us from various parts of the Province for examination.

One hundred and twelve specimens of poultry were received during the year for examination as to nature of illness or cause of death. Of these twelve per cent. were cases of advanced tuberculosis. These tubercular specimens came from the following counties: Lincoln, Bruce, Huron, Wellington, Lambton, Simcoe, Halton and York, thus indicating that this disease of poultry is still widely scattered over the Province and, as indicated by the letters accompanying the specimens, is causing heavy losses in the flocks where it is prevalent.

A sample of "Nitro Bacter Soil Vaccine" was tested and found to be of no value in crop production.

As time permitted the routine work in connection with the Agglutination Test for contagious abortion of cattle was continued in two herds.

Tests made of the sanitary quality of the milk delivered by the seven Dairy School patrons during the summer months indicate that it would not be satisfactory for condensing and powdering purposes, and that considerable improvement will have to be made before it can be classed as satisfactory for purposes such as these. Lack of prompt and thorough cooling is largely responsible for the large numbers of bacteria found; milk temperatures ranging from 66° to 76° when delivered were found on two days during July and August when the minimum morning atmospheric temperatures were 54° and 63° respectively, outside.

Payment on the basis of sanitary quality promptly and usually effectively directs the attention of milk producers to matters such as dirt in milk, bacterial content, unsterile utensils, efficient cooling, etc., which they are apt to neglect to a greater or less extent when payment on a fat basis only obtains. Certain large milk purchasing concerns in the U.S.A. now pay cash premiums per 100 lbs. of milk based on the number of bacteria found per cubic centimeter.

Several tests of whey cream, butter, and whey cream, showed the presence of large numbers of micro-organisms in these products, and the statement that "the cheesemaking process removes about 95% of all the bacteria in the milk" has not been upheld. In view of this fact butter-makers are well advised to efficiently pasteurize all whey cream being manufactured into butter, and to hold whey cream temperatures down as low as possible before pasteurization to check fermentations which will otherwise occur.

Interest by creamerymen in the microbial content of creamery butter, particularly that made from pasteurized cream, has now developed to such an extent that it was found necessary to employ a man to give a large part of his time to this work.

574 samples of butter were received from the Grading Station during the summer of 1921, compared with 315 in 1920. These 574 samples represented butter made in 56 creameries, but as 13 of these sent three samples only or

fewer, we have 513 samples from 43 creameries, an average of 12 samples per creamery or one every 10 days. Nine creameries sent 18 samples each or one every week of the eighteen weeks during which analyses were made.

STUDYING AND CONTROLLING INSECTS.

European Corn Borer. As soon as the discovery of this new and very destructive insect was made late in the summer of 1920, a study of its habits was begun by the Entomological Department and preparations made for a very careful investigation of its life history the next year. The Department of Agriculture voted a sum of $2,000. to cover the expenses of the investigation and other work that might be necessary. Headquarters were established a few miles from Port Stanley, in about the centre of the worst infested area. A great mass of data on the insect's life history and habits was accumulated and many valuable control experiments given a preliminary trial. Although it will be necessary to continue the investigation next year, we already have strong hopes that the way to ultimate and successful control is beginning to open up as a result of the work done by our staff and by the Dominion Entomological Branch.

In addition to the life history and control studies we have taken as large a share as we felt we were justified in taking, of the scouting work to discover how far the insect has spread throughout the Province.

The results of these studies on the European Corn Borer are now being put into a bulletin which it is hoped will be ready for distribution early in the spring.

Blackberry Leaf-Miner. This insect was not nearly so abundant this year as it had been during the previous four or five years, the difference evidently being due to the great number of parasites in the late summer and fall of 1920. In that year it had been shown that adults would not lay eggs upon leaves covered with hydrated lime; hence it was felt that here at last we had a simple and inexpensive clue to control. However, on testing the method carefully, we were greatly surprised to find that we were faced by two dilemmas:—first, to keep the leaves, including the new leaves that were constantly forming after the flies began to emerge, continuously covered with the hydrated lime and, second, to prevent burning if we did thus keep them covered. After testing many ways of applying the hydrated lime and several stickers or adhesives with it, it was finally decided that there were too many difficulties in the way of this proposed method of control to make it practicable. Hence the control of this most baffling insect still remains unsolved.

Peach Tree Borer. During the last two or three years some investigators in the United States have applied paradichlorobenzine crystals in a ring in the soil a little distance away from the trunk of the tree to kill the borers. This has worked well in the United States with the older trees but has injured some of the younger trees. This new control method was tested by us this year on a number of one, four and seven or eight year old trees. The full results will not be known until next spring and even then the experiments will have to be repeated before we shall be able to feel sure that the method can be recommended.

Corrosive sublimate solution (1 to 1,000) was also tested in a preliminary way for the same insect. This was poured around the trunk of the tree at the ground, using about a pint to a tree. Two applications, one about July 1st. and the other about August 1st. were required. Here again the tests must be repeated for conclusive results.

At the same time that these experiments were conducted a study was being made of the life history of the borer and considerable data obtained.

Green Bug of the Apple and Pear. In 1920 this leaf bug was first discovered in Ontario as an apple and pear pest in two orchards near Newcastle, where it has almost ruined the entire pear crop and had injured a high percentage of the apples. Hence it was decided to try control experiments this year. The Dominion Entomological Branch, having become interested in the problem, offered to co-operate and the offer was accepted. In order that the orchards might serve for a test of various spray mixtures for the control of other insects and diseases it was decided to give them the regular three sprayings. These will be mentioned below.

Careful watch was kept for the first appearance of the Green Bug nymphs and as soon as it was believed they had all hatched, which happened to coincide fairly closely with the fall of the pear blossoms, the trees were heavily sprayed at high pressure, 225 lbs., with nicotine sulphate 40% at the strength of 1 pint to 100 gallons of the ordinary spray material being used for the other troubles. Part of the orchard was also dusted with nicotine sulphate and sulphur.

The results of the spraying, wherever done immediately after the blossoms fell, were entirely satisfactory; but where postponed a few days were only partially so. The dusting, however, was not nearly so successful, and many pear trees thus treated had nearly all their fruit so badly deformed as to be culls. The dust, moreover, proved altogether too costly for commercial purposes.

Spraying and Dusting Tests. As mentioned above, the orchards where the Green Bug was working were used for spray and dust tests. To these part of a third orchard was added.

The dusts used were (a) sulphate 90% and arsenate of lead 10%, (b) copper sulphate 10%, calcium arsenate 5% and hydrated lime 85%. The liquids tested were (a) lime sulphur 1 gallon to 40 gallons of water, 1 lb. calcium arsenate and 3 lbs. hydrated lime, (b) Bordeaux mixture, 3 lbs. copper sulphate, 6 lbs. hydrated lime and 40 gals. water, to which was added I lb. calcium arsenate. Only three applications were given in each case. In one block the Bordeaux mixture was used for the first two applications and lime sulphur for the last to prevent russeting. The weather was moist a good deal of the time but the applications were applied at the right time as determined by years of experience.

The results showed that either Bordeaux or lime sulphur gave excellent control both of biting insects and apple scab. The same good results were also obtained where Bordeaux was used for the first two sprays and lime sulphur for the third. These results include such susceptible varieties as McIntosh and Stark. Neither dust proved satisfactory in the control of scab, but the sulphur and arsenate of lead was better than the copper sulphate, calcium arsenate and hydrated lime. Stark trees treated with either dust had over 75% of scab. McIntosh were also very scabby running so high as 90% where the Bordeaux dust was used and 76% where the sulphur arsenate of lead dust was used. This demonstrated clearly that no matter how well timed and how carefully done dusting will not in a wet season control apple scab so well as liquid sprays, at least where the same number of applications are given. The dusting was done late in the evening or early in the morning or directly after a light shower to give it a better chance to adhere to the foliage and fruit.

Brown Rot of Cherries. Experiments on the control of this disease which we had begun last year were continued this year. These experiments though very encouraging, will require another year at least before recommendations can be based on them.

Canker Worms. From various parts of the province came requests to visit districts where canker worms were very abundant. This, so far as time permitted, was done, and information on control given in all cases.

Nursery Inspection and Fumigation. The inspection of nurseries was continued as usual. It is gratifying to find that we are able to keep our nurseries almost entirely free from San Jose scale, the inspectors sometimes working for several weeks before finding a single specimen.

The fumigation of nursery stock has been rigidly enforced.

Orchard Inspection. There has been little change in this work the last few years. Peach yellows and little peach are being kept under control well, this year the total number of diseased trees removed in the Niagara district being 741, last year it was almost the same.

WEEDS AND PLANT DISEASES.

Weeds. Analysis of the correspondence during the past twelve months indicates that the following weeds have attracted most attention this year:—Field pepper grass, which during the past year has been largely spread through the province as an impurity in clover seed; field bindweed; finger crab grass, which was extremely troublesome this year in lawns, tennis courts and golf greens: poison ivy, troublesome around summer homes: twitch grass; perennial sow thistle, and wild mustard.

Plant Diseases. This summer smuts and rusts of grain were very prevalent and in some counties caused the farmers very severe losses. Oat smut was especially destructive. In some fields examined by the writer over fifteen per cent. of the crop was destroyed by this disease. Leaf rust of oats also caused much damage in many parts of the province. Some of the Agricultural Representatives reported fields in which the crop was a total failure, largely due to the severity of this disease. Apple scab was bad especially in the eastern apple growing sections of the province. The efficiency of thorough spraying for the control of apple scab was demonstrated again this year, as in well sprayed orchards from eighty to ninety-five per cent. of the fruit was free from scab.

Other diseases prevalent this year were plum pockets, corn smut, stem blight of asters and strawberry leaf scorch.

Strawberry Troubles in 1920. This spring many strawberry growers in the Province reported that a large percentage of their plants had died during the winter, or that the plants had started into growth but failed to set fruit. They requested that an investigation be made to ascertain the cause of the trouble. Two inspection trips were made with this object in view, one trip along the Ontario Lake Shore from Bronte to St. Catharines, and the other through a portion of the Grand River Valley.

In the Grand River Valley the trouble was chiefly due to winter injury and late frosts. In the Ontario Lake Shore district there was some winter killing but most of the trouble was due to the fungus disease known as leaf scorch. The plants in this district were badly affected by this disease in 1919, and went into the winter in such a weakened condition that they failed to survive the cold of the winter and early spring. The varieties which were most injured by the leaf scorch were Glen Mary, William Belt and Ruby. Varieties which appeared to be most resistant to leaf scorch were Williams, Parsons Beauty, Vanoise, Portia and Senator Dunlap.

Purity Tests of Commercial Seeds. Purity tests according to the standards designated by the "Dominion Seed Control Act" were made of eighty samples of

clover and timothy seed. Out of twenty-two samples of alsike seed, four graded No. 1, five No. 2, seven No. 3, and six were disqualified. Out of twenty-two samples of red clover seed, three graded No. 1, three No. 2, four No. 3, and twelve were disqualified. Out of twenty-one samples of sweet clover seed, nine graded No. 1, six No. 2, two No. 3, and four were disqualified. Out of thirteen samples of timothy seed, seven graded No. 1, one No. 2, three No. 3, and two were disqualified. Only two samples of alfalfa seed were submitted for purity test, one graded No. 1, and the other was disqualified. In addition to the above tests of clover and grass seeds according to the Seed Control Act, purity tests were made of a large number of samples of seed grain, lawn grass seeds and of chop and other food stuffs.

During the past year the following research work has been carried on,

Co-operative experiments in weed eradication.
Potato disease investigations in co-operation with Agricultural Representatives.
Plot experiments with potato diseases.
Spraying experiments in the control of late blight of celery.
Experiments to test the "Dry Formaldehyde Treatment" for the prevention of oat smut.
Investigation of the causes and means of control of winter blight or streak of tomatoes.
Dusting experiments for the prevention of rust of snapdragons.
Experiments in the control of Pod Spot or Anthracnose of Beans.
Experiments in the prevention of Rhizoctonia or Black Scurf of potatoes.
Investigation regarding the humidity of commercial greenhouses and its effect upon the prevalence of diseases of greenhouse plants.

During the past ten years (1911-1921) co-operative experiments in weed eradication have been carried on by this Department. Over eighty farmers have carried on satisfactory experiments. The weeds experimented with were perennial sow thistle, twitch grass, bladder campion or cow bell, wild mustard, ox-eye daisy, field bindweed, wild oats and chess. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with and demonstrated to their own satisfaction the effectiveness of the method tried, and at the same time their results furnished practical information to others.

Practical Information Gained From These Co-operative Weed Experiments.

1. That such weeds as perennial sow thistle, twitch grass, wild mustard and bladder campion, can be successfully and comparatively easily controlled by proper methods of cultivation and cropping.

2. That good cultivation followed by rape sown in drills provides a means of suppressing both perennial sow thistle and twitch grass.

3. That rape is a more satisfactory crop to use in the destruction of twitch grass than buckwheat.

4. That rape gives much better results in the suppression of twitch grass and perennial sow thistle when sown in drills and cultivated than it does when sown broadcast.

5. That thorough deep cultivation in fall and spring followed by a well cared for hoed crop will rid a field of bladder campion.

6. That mustard may be prevented from seeding in oats, wheat and barley by spraying with a twenty per cent. solution of iron sulphate without any serious injury to the standing crop, or to the fresh seedings of clover.

Potato Disease Investigation in Co-operation with Agricultural Representatives. This work has been carried on in order to determine the best source from which to obtain seed potatoes free from the so-called physiological

diseases such as leaf roll and mosaic, and which would give larger yields. Seed potatoes of three varieties, namely Irish Cobbler, Green Mountain and Dooley, were obtained from Northern Ontario, Old Ontario selected stock, Old Ontario common stock, and the Maritime Provinces. Seed from these sources was planted side by side in plots in twelve counties in Ontario. The Agricultural Representatives co-operating with the farmers in their counties looked after the planting, spraying and cultivation of these plots. During the summer each plot was inspected for disease by a member of this Department. The following table summarizes the results of these experiments and shows the average percentage of leaf roll and mosaic found in the plants grown from the seed of the three varieties from the four different sources.

Number of plots inspected	120
Number of plants examined	29,000
No. of farms on which plots were situated	12
Average percentage of Leaf Roll in Irish Cobblers:	
Northern Ontario	1.4%
Old Ontario selected	6.4
Old Ontario Common	8.2
Maritime	1.1
Average percentage of Leaf Roll in Green Mountains:	
Northern Ontario	.5%
Old Ontario selected	4.6
Old Ontario common	5.5
Maritime	.6
Average percentage of Leaf Roll in Rural New Yorker (Dooley):	
Northern Ontario	3.4%
Old Ontario	4.8
Average percentage of Mosaic in Irish Cobblers:	
Northern Ontario	.2%
Old Ontario selected	2.7
Old Ontario common	4.2
Maritime	.2
Average percentage of Mosaic in Green Mountains:	
Northern Ontario	.1%
Old Ontario selected	4.2
Average percentage of Mosaic in Green Mountains:	
Old Ontario common	6.5%
Maritime	1.4
Average percentage of Mosaic in Dooley:	
Northern Ontario	.9%
Old Ontario	1.5

Experiments to Control Late Blight of Celery. Spraying experiments to control late blight of celery have been conducted in co-operation with the Horticultural department for the last nine years. During the first eight years such fungicides as Bordeaux mixture, lime sulphur, sulphide, formalin and corrosive sublimate were tested in regard to their efficiency in the control of late blight of celery. In the eight years experiments, Bordeaux mixture proved to be the only fungicide which gave uniformly satisfactory results. This year liquid Bordeaux and Bordeaux dust were experimented with in order to ascertain whether the dust could be recommended as a substitute for the liquid Bordeaux. On October 15th, when the celery was harvested, plants sprayed with the liquid Bordeaux were commercially free from blight. The unsprayed plants were almost completely destroyed by the blight. Sprayed plants averaged 150 marketable plants to one hundred feet, while unsprayed plants of the same varieties were practically useless for market purposes. Plants treated with the Bordeaux dust were commercially free from blight and were as vigorous in growth as the sprayed plants, but there was a little more blight on them.

It was found that the Bordeaux dust could be very rapidly and easily applied, but it did not adhere to the leaf as well as the liquid Bordeaux, and hence the protection against blight was not quite so complete.

Experiments to Test the "Dry Formaldehyde" Treatment for the Prevention of Oat Smut. This method has been tested for four successive years. In all thirty-five field trials under ordinary farm conditions have been made, and 2,122 bushels of oats treated. The varieties of oats treated included O.A.C. No. 72, Alaska, Banner, White Cluster, Mammoth Cluster and Siberian. In 1918, number of bushels treated 61; percentage of smut which developed in crop from treated seed 0, percentage of smut which developed in crop from untreated seed 6.5. In 1919, number of bushels of oats treated 630, percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.26. In 1920, number of bushels of oats treated 1016, percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.36. In 1921, number of bushels of oats treated 415, percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 5.8.

The average for the four years shows no smut in crop from treated seed and 4.23 per cent. of smut in crop from untreated seed.

Tests were made also to determine whether this treatment injured the vitality of the seed. In the four years' experiments the average percentage of germination of treated and untreated seed was found to be exactly the same, namely 97.5 per cent.

It is thus seen that the results have been uniformly satisfactory throughout the four years' experiments. No injury to the vitality of the seed has resulted and the control of the smut has been almost perfect. In no case has there been any more than a trace of smut in any of the fields with treated seed, while the amount of smut in the fields sown with untreated seed for check averaged 4.23 per cent. In some of the checks there was over fifteen per cent. of smut present.

The advantages of this method over those which have been in general use heretofore are, simplicity, rapidity and ease of application. In these experiments it was found that one hundred bushels of oats could be treated in fifty minutes by this method and that there was no waiting for the seed to dry after treatment, or danger of the grain sprouting or molding or being swollen so that it would not run freely through the drill.

Experiments With Winter Blight or Streak in Tomatoes. This is a very common disease in tomatoes grown under glass in Ontario, often causing serious losses, and in some instances making the production of a profitable winter crop of tomatoes impossible. The disease sometimes occurs in fields, especially in those very heavily manured. The name winter blight has been applied to this disease because it is especially troublesome in the winter crop of tomatoes. It is called streak by the growers on account of the characteristic dead, brown, shrunken lesions appearing on the stems.

Experimental work was begun on this disease in 1914, and has been continued every year since. Some of the experiments were carried on in the college greenhouses but most of them were conducted in large commercial greenhouses.

A preliminary report of this disease was published in Phytopathology, Volume 6, No. 2, 1916. The results of the experiments conducted up to that time lead us to conclude that no pathogene was responsible for this disease but that it was the result of soil conditions.

Subsequent work has supported these preliminary conclusions. During the

past five years almost uniformly satisfactory results have been obtained in the control of this disease by the addition of phosphoric acid and potassium to the soil. In many cases it has been found possible to cause tomato plants to outgrow the winter blight by the application of these fertilizers to the soil. Such treatment has resulted in the saving of large commercial crops of tomatoes here in Ontario.

HORTICULTURE.

Twenty-six places were visited by an official, on request, for the purpose of giving advice in the laying out of school grounds, community grounds, and town parks. Plans were furnished for twenty-eight school grounds, nineteen farm home grounds, and seventeen community parks, memorial parks, etc.

As to the investigational work the Professor of Horticulture reports:

As results of experiments begun in 1914, and carried on with the co-operation of fruit growers on the summer pruning of young apple trees, there has now been obtained some definite result. Summer pruning has been and still is widely recommended as a means of bringing young fruit trees into bearing at an earlier age. This matter has been thoroughly tested with the Northern Spy variety, which is one of the most valuable commercial varieties grown in the Province and one which is notoriously late in bearing. The experiments were located as follows:

Thomas Coyte, Port Hope, Durham, Ontario—20 trees.

J. W. Bamsey, Newcastle, Durham, Ontario—16 trees.

Milton McAllister, Paris, Brant, Ontario—20 trees.

Thomas Blayney, Renton, Norfolk, Ontario—16 trees.

The trees in each orchard were uniform in size at the beginning of the experiment.

Practical recommendations based on these results are as follows:

(1) Summer pruning does not advance the bearing age.

(2) Summer pruned trees do not make as much growth as dormant pruned trees.

(3) Dormant trees pruned according to the methods in common use do not grow as rapidly or come into bearing as early as trees with little or no pruning, either dormant or summer.

(4) Unpruned trees have made a larger growth and are now bearing more heavily than either summer pruned or dormant pruned trees.

It is recommended that young apple trees at the time of planting and for a year or two afterward be given only enough pruning to form a good frame work of branches, after which they should be pruned as little as possible until they come bearing.

The method of pruning with both dormant pruned and summer pruned trees was to thin out small branches in order to relieve crowding and to admit sunlight to all parts of the tree. Dormant pruning was done before growth began in the spring, summer pruning in the latter part of August, after growth had finished for the year.

These experiments will be continued in order to determine whether summer pruning will have any effect on the quantity or quality of fruit after the trees begin bearing.

Biennial Fruiting. A special study has been made of biennial bearing in apple trees and has demonstrated that the habit can be corrected. Trees of the Wealthy variety which formerly bore in alternate years are now bearing full crops annually. The result of the investigation is briefly summarized as follows:

(1) Fruit bud formation in biennial trees is confined entirely to the "off" year.

(2) Alternate bearing is caused by the development of too many fruit buds in the "off" year.

(3) No treatment can be given in the "on" year which will reduce the number of fruit buds formed in the "off" year. Thinning of fruit has no effect on the development of fruit buds for the succeeding year.

(4) The period of fruit bud formation is very short: not longer than 4 to 9 days—and is also completed much earlier in the season than we formerly thought.

(5) Fruit buds on the apple are borne usually on short growths called "spurs." In the case of an "off" year tree we find that fruit spur development is completed by the time the "on" year tree of the same variety is in full bloom. The date of completion of growth falls ordinarily between the 20th and 30th of May.

(6) Regular or annual bearing can be secured by preventing the formation of fruit buds in such large numbers in the "off" year. Prevention consists in stimulating the vegetative growth of the tree so that a certain number of spurs which would normally develop fruit buds are forced into vegetative growth instead.

(7) Biennial bearing trees frequently produce blossoms on 80% to 90% or more of their spurs. 30% to 40% of these blooming annually would be quite sufficient to insure full crops.

(8) The necessary stimulus can be given by moderate heading back of small branches throughout the top of the trees. This is only effective in the early spring of the "off" year. A light application of nitrate of soda as a fertilizer early in the spring of the "off" year produces a similar result. A more desirable orchard method would perhaps be to combine both practices.

(9) The studies suggest that in order to get full crops annually it is necessary to stimulate vegetative growth rather more than is customary in Ontario practice at present.

(10) After regular bearing is established, early spring growth conditions become very important, as any unfavorable conditions may check growth unduly and throw the tree again into biennial bearing by allowing the development of too many fruit buds.

(11) Attention is called to the importance of thorough soil drainage for purposes of raising the soil temperature and promoting aeration in early spring so that vigorous root growth may begin as early as possible.

(12) Attention is called to the fact (established by other workers) that higher soil temperatures occur under sod in early spring. It is suggested that the sod mulch system of orchard management may prove desirable, on further invesigation. It is already known to be an important safeguard against winter killing.

Much of the information outlined above is new and forms a distinct and valuable contribution to our knowledge of fruit bearing. It is considered that the points outlined above are definitely established and it remains now to demonstrate the same in orchard practice under commercial conditions, working in co-operation with growers.

It would appear that we shall eventually require to establish at isolated points, plantations of certain varieties for the production of seed from which to grow the seedling roots used by nurserymen. The first problem, however, is to determine the best varieties for the purpose.

LAND DRAINAGE.

The system of having permanent men in different districts has, as before, proved very satisfactory. More work, and more efficient work has been accomplished, errors and complaints have been reduced to a minimum. The fall work has been very well completed leaving a small number of jobs for the spring.

The following is a table showing the number of surveys and the acres surveyed during the summer:—

County.	No. of Surveys	Acres.
Brant	8	235
Bruce	2	125
Durham	1	30
Carleton	1	250
Essex	16	804
Grey	1	15
Glengarry	1	60
Haldimand	1	150
Halton	11	242
Hastings	7	185
Huron	4	425
Kent	50	3,799
Lambton	5	375
Lanark	1	40
Leeds	1	75
Lincoln	23	1,161
Middlesex	14	605
Norfolk	3	250
Northumberland	1	40
Ontario	3	110
Oxford	1	1/2
Peel	2	35
Perth	1	100
Peterboro	1	50
Prescott	1	50
Renfrew	2	100
Victoria	1	30
Waterloo	1	20
Welland	2	55
Wellington	3	195
Wentworth	11	328
York	2	222
	182	

During January and February two Short Course classes were conducted. One at Guelph and one at Chatham. Each was held for two weeks and was well attended. At the close of the course in Chatham an examination was held, and several wrote for the Ditcher Operator's Certificate, granted by the Department of Agriculture.

Ditching Machines. During the season all three ditching machines have been in operation for the most part on demonstration work. The machine which was at La Vallee was moved to Verner, where a demonstration plot was put in for J. B. Leach. Much interest was taken in the operation of the machine and every day many visitors came to see the work which was being done. Much interest was aroused in drainage work and there are prospects for considerable work another season. Consequently the machine was housed for the winter and will be operated there this coming summer.

The machine which was at the College was moved to Pakenham where two drainage plots were put in. Each of these opened up a section very much interested in drainage work, and where much work had been promised. However, with the

poor crops and general depression most of the farmers did not see their way clear to do the work they had planned, and most of it was cancelled. Only a small amount of commercial work was done in the district. Later in the fall the machine was moved to the Ottawa Dairy Farm, but because of a bad breakdown which delayed operations for two weeks, and the early indications of winter, it was necessary to lay the machine up until spring.

The third machine has been at Whitby all summer, operating on a commercial basis.

Experimental Drainage Plots. As has already been mentioned three demonstration plots were established during the summer, one at Verner, fifty miles east of Sudbury, in a section of the finest farming country in Ontario. The plot consisted of about twenty acres, one-half of which was drained. One carload of tile was used and during the installation of the drains not one stone was struck. This is the first drainage work for this district, and drainage is badly needed. Much interest has been aroused. The Township Council was interested in passing passing the by-law allowing them to borrow money under the Tile Drainage Act, and next season we expect much work to be undertaken in this district, providing tile can be secured at a reasonable price.

Two other plots were put in in Lanark county in the district of Pakenham. These were of the same nature as the plot at Verner, varying some in size. The district around Pakenham is badly in need of drainage, but so far the farmers are not fully aware of its importance. It is hoped that the plots put in this year will demonstrate the advantage of having their land tiled. These plots will be carefully followed for the next three years and the results reported.

Demonstration Plots. Since 1912 some twenty-nine demonstration plots have been installed throughout the Province. During the past summer a special effort was made to visit these plots and estimate their value to the district as a demonstration. At the present time we are able to report on most of the plots. This report follows. Because of the poor crops in Eastern Ontario, little could be gained from an inspection of the crops and it was thought better that this be left for another season. On the whole the plots have been instrumental in encouraging drainage work and there is every reason to believe that the time and money they have cost have been well spent. In a few cases they have not shown beneficial results. In the case of one plot in Haldimand County, where they have heavy clay soil the lines of tile are too far apart, and with one in Welland County, the tile were put in in muck and have gotten out of line. Other cases where failure was reported was because of the poor outlet, which had not been given proper attention.

FARM MANAGEMENT SURVEYS.

During the past years the Farm management surveys of the dairy farming business in Oxford County, of the beef farming business in Middlesex County, and of the mixed farming business in the apple growing districts of Durham and Northumberland Counties were continued, this being made the final year of the surveys in Oxford and Middlesex Counties. In addition to the above mentioned surveys, new surveys were organized and conducted of the fruit growing business in Niagara district and of that type of farming peculiar to south-western Ontario in those parts of Kent County within a radius of fifteen miles of Chatham.

The data obtained from the analysis of the Niagara 1920 survey and the Durham County survey made in 1920 have been published and are now available for

distribution, being bulletins numbered 282 and 286. A considerable amount of work has been done on the other surveys but these are not yet ready for publication.

During the year three reports on the cost of production of milk were prepared by the staff of this office. The data presented in these reports were used by the dairymen and dealers in arriving at an equitable price to be paid to the producers of milk for their product. A bulletin on milk production costs has been prepared which is now in the hands of the printers and should soon be available for distribution.

At the request of a number of tomato growers in the Niagara district, a special investigation was conducted into the cost of growing and handling tomatoes. A report was prepared on this work which was used by the growers in making their agreement for the season with the canning companies.

Early in the year this department was able to be of material assistance to the Eastern Canada Live Stock Union in their case against what were considered exorbitant freight rates on cattle shipments. We are pleased to be able to state that the data obtained and analyzed by the members of this department were of no small value in gaining a favourable decision from the Dominion Railway Commission.

In addition to the regular work of the department, District representatives were assisted at most of the Agricultural Short Courses held in the province.

Farm Cost Accounts. In March, 1920, it was thought advisable to extend the work of the department to include an investigation of farm management conditions by detailed cost accounts. As practically no such work had previously been carried on in the province it was necessary to become thoroughly acquainted with the various systems in use where cost accounting had been successfully used for a number of years as a basis for farm management investigations. With this in view a representative of the department went to Cornell University at Ithaca, New York State, where the work is being conducted under the direction of Dr. G. F. Warren.

In April of the same year twenty-five farmers in co-operation with the department began cost accounting in Oxford County, the chief dairy district of Western Ontario. In May and June the same number of farmers commenced the work in the mixed farming district around Orangeville, comprising portions of Dufferin, Peel and Wellington Counties. The work is conducted along much the same plan as that being used in New York State except that, in place of visiting the farmer only once or possibly twice during the year, supervision is by the route system. Each co-operator is called upon every month or six weeks and assisted with any difficulties which may have arisen and at the same time the books are checked to insure greater accuracy.

In each of the districts, farm survey investigations had been conducted for two and three years previous so that the supervisor was acquainted with the men, which greatly facilitated the selection of suitable co-operators. As a result, of the fifty men who commenced the work forty-four completed the first year's work and thirty-eight of them are continuing this year.

In May of this year the work was also commenced on fifteen farms in Durham and Northumberland Counties in the mixed farming and orchard district along Lake Ontario.

Farm cost accounting works hand in hand with the surveys previously conducted by this department. By the survey method careful estimates are obtained from the farmer regarding his farm business; and while in this way it is impossible to obtain any definite data for the individual farm yet by grouping farms

of the same size in that particular district and obtaining average figures the results should very closely approximate those obtained by cost accounts.

One of the chief difficulties with the survey method is the fact that no definite idea can be obtained of the distribution of labour over the various enterprises on the farm.

In cost accounting a separate account is kept with each branch of live stock and with each crop. The actual transactions concerning each are recorded as they are made and in addition the number of man, horse and equipment hours used by each enterprise are also recorded. By this means it is possible to calculate the cost of production of each of the various commodities grown on the farm. As the work progresses it will also be possible to draw more definite conclusions from survey investigations by making use of cost accounting figures.

The data collected on the forty-four farms in 1920 are now being compiled in the office, the results of which will be available early in 1922.

Work With Bees by Provincial Apiarist.

The 1921 spring report showed that the Ontario beekeepers had less winter loss of bees than for any previous year reported. While the spring was not entirely favourable in all sections of the Province, the bees were in fair to good condition for the main honey flow. The final white honey crop report showed an average of seventy-five pounds to the colony against forty-six pounds in 1920, and forty-four pounds in 1919.

During the past year the same difficulty occurred as in previous years, in that the department could not secure enough experienced beekeepers to act as apiary inspectors for sufficiently long periods. Sending men into counties where they are not resident or acquainted, means loss of time and increased expense. Another serious feature is that it is impossible to start inspection work until the main honey flow commences, because of the uncertainty of the weather during the fruit bloom and dandelion period. To try to overcome these difficulties, the following letter was sent to all County Secretaries in those counties where American foulbrood exists:

"For the active season of 1922, we are going to try a somewhat different form of inspection than has been heretofore followed. We are asking the county associations where American foulbrood exists, to recommend at least two men (four may be recommended) to act as apiary inspectors in the county for the coming season. This should be brought to the notice of your association at the fall or winter meeting, so that two or more men can be recommended to us. To make this scheme successful, the county associations should only recommend men who have the following qualifications:

They should be successful beekeepers. Even though they have only a few colonies, they should be able to control American foulbrood in their own apiaries. They should be tactful and men who have the welfare of beekeeping interests at heart.

The county association should be very careful in the selection of these men, as if unqualified men are recommended, their appointment would not be considered by the department, and at the same time, American foulbrood would not be controlled in the county. The department pays all reasonable expenses, and the amount of pay would probably be about $5 per diem. The work would continue while the funds lasted. The idea is to get the inspection work started as early as possible during fruit bloom and dandelion period if possible. I feel sure that if the association considers this seriously and will enter into a spirit of co-

operation with this department, that we can largely control American foulbrood, and in time gradually lessen the serious losses from this disease.

We would be very glad to send you any other necessary particulars and urge upon you the necessity of having your meeting sufficiently early so that the names of men recommended may be sent into this office not later than March 1st, and their appointments recommended."

With the co-operation of the counties and with capable resident inspectors, a considerable amount of inspection work can be accomplished quite early in the season and before the beekeeper is very busy in his own apiary. A few fine days, when maples, elms and other early sources are yielding, will enable the inspector to visit some of the apiaries where conditions are bad, and possibly prevent the spread of disease where these apiaries are left until late in the season.

Another desirable feature of the county associations having a share in the apiary inspection work is that the inspection will be done in those counties which co-operate most thoroughly with the department.

During the season 37 apiary inspection demonstrations were held. The attendance at these demonstrations varied from twenty to over two hundred. Apparently these demonstrations are as well attended as when first commenced in 1910.

ONTARIO VETERINARY COLLEGE

Veterinary Practice Board meetings were held as required to consider applications for certificates, and hear those protesting applications. Veterinary Practice Certificate Form I has been issued to 576 applicants, and Veterinary Practice Certificate Form II has been issued to 63 applicants. The Form II certificate is issued to non-graduate applicants that were established in practice five years previous to the passing of the Veterinary Science Practice Act.

The Veterinary College session which ended April 30th, 1921, had a total attendance of 96 students. Nineteen students in the senior year class were successful in passing the final examinations and were granted the (B.V.Sc.) degree by the University of Toronto. A vigorous campaign was conducted to encourage a large attendance and to attract a good type of student to take the Veterinary College course. A number of changes were made in the teaching staff during the year. As a result of lengthening the course from three to four years a rearrangement and expansion of the curriculum was necessary. The extra year has enabled the enlargement of many subjects and a broadening out of the whole course. Two short courses for practicing veterinarians were conducted by the College during the year. The first course held during the month of February was attended by about 150 veterinary surgeons. The second course was held during August and had an equal attendance. A special bulletin was prepared by the department of bacteriology entitled "Hints on Submitting Veterinary Specimens for Bacteriological Examination." An exhibit was made at the Canadian National Exhibition held in Toronto. The display consisted chiefly of specimens from diseased animals and a collection of harmful parasites and plants poisonous to live stock.

With the completion of the new building at Guelph, a new era in veterinary instruction in the province will be started. While the building is being erected on a corner of the college property, it will still retain its identity as the Ontario Veterinary College and have its own administration as in the past. The building, costing in the neighbourhood of $150,000, will be well-equipped and up-to-date in every particular. Moreover, the facilities provided by the departments of the Ontario Agricultural College will broaden and strengthen the course of instruction in many ways, but particularly in live stock. It may be expected that the graduate of the Ontario Veterinary College will, in the future, be regarded as the best all-round man available, and that this should be brought about is one of the main motives of the department in transferring the college to Guelph.

PUBLICATIONS AND STATISTICS

The work of compiling agricultural statistics was carried on in co-operation with the Federal authorities. The results are published from time to time as completed.

The distribution of the Annual Reports has been continued and the following are the figures of the numbers printed for distribution:—

Minister's Report	1,500
The Ontario Agricultural College	1,500
The Experimental Union	30,000
Agricultural Societies and Field Crop Competitions	21,000
Horticultural Societies	23,000
Vegetable Growers' Association	5,000
Live Stock Branch	5,000
Stallion Enrolment Board	2,500
Agricultural Statistics	20,000
Fruit Growers' Association	4,000
Entomological Society	3,500
Beekeepers' Association	4,000
Total	121,000

The following crop bulletins have been printed for distribution:—

145	November, 1920	20,000
146	April, 1921	4,000
147	May, 1921	2,500
148	August, 1921	6,000

Other bulletins printed for distribution were:—

*210	Strawberries and Raspberries	15,000
*222	Currant and Gooseberries	6,000
*229	Smuts and Rusts	15,000
*247	Farm Poultry	6,000
*265	Bacteria; Friends and Foes	6,000
*267	Farm Water Supply	12,000
280	Alfalfa	12,000
281	Better Bulls	12,000
282	Farm Management: Part III	30,000
283	Sweet Clover as a Farm crop	30,000
	Total	144,000

*New editions.

Circulars were printed for special distribution as follows:—

	Veterinary specimens for Bacteriological Examination	4,000
33	Cost of Producing Tomatoes	6,000
34	Ginsing	6,000
35	Sunflowers	30,000
36	W. I. Leaflet—Meeting and Speakers	5,000
37	Seed Cleaning	6,000
38	Partial Neutralization of Acidity of Cream Before Pasteurization	6,000
	Total	63,000

AGRICULTURAL AND HORTICULTURAL SOCIETIES

The agricultural societies which held their fairs early in the season were very successful in developing good exhibitions and increasing their finances. The late in the season fairs suffered heavily through wet weather. The Wet Weather Insurance Fund of $10,000 was completely absorbed by the seventy-seven agricultural societies that applied for its protection.

The number of societies to enter the Regular Standing Field Crop Competition was up to normal, and in addition to these thirty-eight took part in the new Combined Standing Field Crop and Threshed Grain Competition recently inaugurated. In the Combined Standing Field Crop and Threshed Grain Competition the crop is first judged in the field and again after threshing, the grain is scored in the bin or sacks. Societies that conducted a Combined Standing Field Crop and Threshed Grain Competition were not eligible to enter the usual Standing Field Crop with the same kind of grain, but could enter in both competitions by using a different crop for each. The competitors were required to sow the same kind of registered grain or certified potatoes of the same variety, the society being given freedom of selection for its competitors. Seven prizes were offered in each of the competitions with a total value of $275. Of this amount the society was obliged to contribute $25 which could be counted in as expenditure for agricultural purposes on which the Legislative grant is based.

Horticultural Societies.

Twenty new Horticultural Societies were organized during 1921, bringing the total up to 140 active societies in the province. The result of the Horticultural Society activities is being shown in the beautification of homes, school grounds, street boulevards, parks and cemeteries, and more particularly in the township societies, in the improved appearance of farm homes and surroundings. The Ontario Horticultural Association made a display of cut flowers at the Canadian National Exhibition.

Vegetable Growers' Association.

The Vegetable Growers' Association increased in membership during the year. Field crop and garden competitions were held as usual with the following crops: onions, tomatoes, celery and potatoes. Exhibits from the prize winning fields were shown at the Canadian National, Central Canada, the Industrial, and at the Western Fairs. The competition for the three-acre garden created much interest in all vegetable sections of the province.

Plowmen's Association.

The Ontario Plowmen's Association has been the means of reviving in many sections of Ontario the local plowing match. The international plowing match, tractor and farm machinery demonstration held at Woodstock on October 19-20-21 was a great success. There were 114 teams at work, and 55,000 people present during the three days. Nearly 100 teams were provided by the farmers of Oxford County as an aid to distant plowmen. Tractors, farm machinery and different appliances used in the Canadian farm homes were exhibited by manufacturers or their agents. No fakirs or midway artists were permitted on the grounds.

LIVE STOCK BRANCH

Stallion Enrolment.

The stallion enrolment report for the season of 1921 shows that there were 1,511 horses enrolled. The summary of the horses enrolled for the years 1913 to 1921 inclusive, shows that there has been a gradual decrease in the number of horses enrolled. The high point was reached in 1914 with an enrolment of 3,201, the lowest being in 1921 with 1,511. The Clydesdales have decreased from a maximum of 1,332 in 1915, to a minimum of 845 in 1921. The Percherons have increased from 236 in 1913 to 347 in 1921. The enrolment of other heavy draught breeds such as Shire, Belgian Draft, and Suffolk, only total in 1921, 51 horses. The standard-bred is being maintained at about the same number of horses, viz., 200. The other light breeds such as Thoroughbred, Hackney and French Coach, are showing a considerable decline. 106 horses received premium certificates for the season of 1921; there appears to be an increased demand for this class of horse in the province.

Local Poultry Associations.

The number of organized Poultry Associations show an increase from year to year, there now being about sixty-five which received Government grant in 1921. In addition to these associations there are a number of others which in all would make a total of about eighty active local poultry associations. In addition to the annual grant paid by the department, a proportion of the expenses of the poultry judges to annual shows are also paid. There are an increasing number of local associations which are carrying on important educational work, and which have been asking to a greater extent than usual, experts from the Ontario Agricultural College, to demonstrate in culling flocks; the effect of these lectures and demonstrations will no doubt be shown in the increased efficiency of the average farm flock.

Campaign for Better Sires.

The campaign for "better sires" has been gaining headway, there being much greater local interest shown in this year's work than formerly. Through the efforts of Fieldmen and Agricultural Representatives, there have been between 300 and 400 inferior bulls replaced by pure breds, and it is also known that in addition to these animals where a change is known, there are very many more changes which have not come directly under the observation of the Agricultural Representative. When the proportion of inferior bulls used in the province is realized, it will be seen that the campaign for better quality in live stock should not only be a matter of serious concern to any Government, but should also enlist the cheerful co-operation of the most progressive farmers in every community.

Winter Fairs.

The Winter Fairs held at Guelph and Ottawa, are under the general supervision of this department, working in co-operation with boards of live stock men elected by the live stock and seed associations. The fair at Guelph, in December, 1920, was one of the best in the history of the exhibition, several of the Departments reaching new records in the number and quality of exhibits. The fair held in Ottawa, January, 1921, created new records for the number of entries in almost

every department. The quality of the exhibits was also high. Much temporary accommodation had to be provided for the increased exhibits, which resulted in the management facing a considerable deficit. This was met in part by an increased grant from the department.

Co-operative Wool Sales.

The Ontario Sheep Breeders' Association, co-operating with the Live Stock Branch of the Provincial Department of Agriculture, has during the years 1917 to 1921 inclusive, arranged for the collection and grading of wool from wool growers throughout the province. The results accomplished by this work have been very gratifying. Great improvement has been made in the quality and condition of the wool marketed through the Ontario Sheep Breeders' Association. Many favourable comments from mills and wool buyers have been received on the improved preparation and condition of the wool. During the season of 1921 approximately 700,000 pounds of Ontario wool was collected from nearly four thousand wool growers. This wool was graded by graders supplied by the Federal Department of Agriculture. It is interesting to note that of this quantity of wool 82.65% was graded as follows:—

Medium Combing	10.5%
Low Medium Combing	34.1%
Low Combing	22.55%
Course	15.5%

showing that the great bulk of our Ontario wool belongs to the combing class rather than the clothing class of which we had less than 5% in this season's turnover.

Owing to the domestic conditions under which sheep are raised in Ontario, a certain percentage of rejects is always present. In the 1921 pool 10.25% graded as rejects. Approximately one-half of the rejects was due to burry and seedy wool In addition to the grades already mentioned, approximately 3% of the wool found its way into ten other grades.

The preparation of the wool is indicated by the fact that less than one-half of one per cent. of the total quantity marketed was not tied with paper twine, specially prepared for this purpose.

At the close of the 1921 season, the Ontario Sheep Breeders' Association withdrew from the collecting and grading of wool, with the understanding that this work will now be undertaken by the Canadian Co-operative Wool Growers' Limited, Toronto. This organization during the past four seasons has acted as selling agents for the Ontario Sheep Breeders' Association.

Ram Clubs.

During the year 1921, the Live Stock Branch of the Provincial Department of Agriculture has formed three Ram Clubs, one club each in the following counties:— Lanark, Renfrew, Lennox and Addington. These clubs consist of from twelve to twenty members who have never used a purebred ram before, and who agree to take a department ram for the seasons of 1921, 1922, 1923 and 1924. This ram is supplied to the sheep raiser free of charge on the condition that he keep each ram for two years, and that he will make reports to the department for the seasons 1922 to 1925 inclusive, giving such information as the date of lambing with the number of lambs of either sex; date of shearing; date of weaning; weight and grade of wool; selling price of lambs and any other information desired. He must also agree to dip his flock at least once a year; dock all lambs, and castrate all male lambs. Each member of the club must also agree to co-operate with the other club

members in arranging for a co-operative shipment of wether lambs to stockyards each season. The average number of ewes in the flocks in Lanark county is seventeen; in Lennox and Addington, thirty-three; and in Renfrew, twenty-one.

It is hoped that the use of good, purebred rams on these flocks may serve as a demonstration for the county, and that follow-up work may be done during the years these flocks are under agreement with the department, in selling to other sheep owners purebred rams, through the good accomplished by the rams in the demonstration flocks.

Sales of Purebred Live Stock.

There are between thirty and forty live stock associations, which hold annually a sale of registered live stock, and which are assisted by the Department of Agriculture with a small money grant. Inspectors are provided where any association wishes to have their stock inspected before cataloguing same for sale. A policy of strict inspection should promote quality in the live stock so distributed through the province, and purebred breeders can not be too careful in their consignments to these annual sales.

Co-operative Shipments of Live Stock.

Co-operative shipments of purebred live stock to Western Canada, owing to partial crop failures in the Prairie Provinces, and other causes, were much lighter than formerly. A total of thirty-four head were assembled in Toronto and delivered at western points.

INSTITUTES BRANCH

The activities in this branch consist in furnishing lecturers and demonstrators for meetings held under the auspices of the Board of Agriculture, farmer's clubs, dairymen's associations, cheese factories, creameries, Women's Institutes and special meetings and short courses planned by the Agricultural Representatives.

While production problems covering beef and dairy cattle, sheep, hogs, horses, poultry, grains, roots, etc., largely form the basis of lectures, discussions and demonstrations, there is an increasing interest from year to year on the part of the farmers in quality and marketing problems.

Women's Institutes.

The Women's Institutes, with their 924 branches and a membership of 30,906, are showing, in the programmes which they provide through the utilization of local talent, and the requests made for assistance from the Department of Agriculture, an ever increasing interest in food problems, home efficiency, child welfare, education, health, recreation, economic questions and citizenship. They are exerting an influence in undertakings which affect the whole community—libraries, consolidated schools, continuation classes, community halls, recreation, study courses, etc.

They are doing much to extend the organization to other centres—small towns, villages, and chiefly rural sections.

The persons employed by this branch are devoting their time largely to lecturing on special lines of work as requested by the Institutes and giving instruction through two weeks' courses in "Food Values and Cooking," "Home Nursing and First Aid," and "Sewing." The number of such courses held during the past twelve months are summarized herewith:

	Enrolment
52 In Home Nursing and First Aid	2,593
33 in Food Values and Cooking	1,476
63 in Sewing	913
	4,962

Speakers were furnished for Women's Institute meetings held at 703 places during late May, June and early July, 1921; and requests for speakers to address special meetings were responded to throughout the year.

Conventions of the Institutes were held at Toronto, London, Ottawa, North Bay, and Fort William, in October and November. Reports were presented by the delegates, and plans for future work considered. Standing committees representing the following lines of work reported and presented plans for future activities—agriculture, immigration, health, education and better schools, legislation, publicity, girls' work.

Instructors and lecturers have been furnished to a number of centres where Institutes do not exist and we trust that more such centres will ask for assistance, for the service which the department has to offer is available to all localities where groups of women will undertake to furnish a suitable place in which to hold meetings or classes with a guarantee of good attendance, and will invite all women and girls in the community to take advantage of the instruction offered.

DAIRY BRANCH

The importance of the dairy industry in this province is illustrated by the total value of our output and comparisons with the other provinces of the Dominion.

The volume and value for Ontario for 1921 was as follows:

(Number of Factories, 889. Creameries, 211)	
Factories produced 103,135,613 lbs. Cheese, valued at	$18,604,766
Creameries produced 43,525,742 lbs. Butter, valued at	16,665,277
Condensed Milk, Milk Powder, etc., valued at	12,241,579
Disposed of by Factories, Creameries, Condensaries and Milk Powder Plants, in the form of Ice Cream, Milk, Buttermilk, Cream, Whey, Soft Cheese, etc., valued at	5,000,000
Farm Butter, Milk used on farms, Town and City Milk Supply, Ice Cream, etc., valued at	23,000,000
Total	$75,511,622

The output of "factories" in Ontario for 1921 was $47,511,622, or $6,452,209 more than the factory production in all the other provinces combined.

The dairy industry in Ontario is capable of great development and has proven one of the most profitable lines of agriculture. With development, the question of quality becomes of prime importance.

It is most gratifying to be able to report that Ontario cheese won the four highest honours at the Dairy Show held in London, England, in October.

The dairy staff consists of—Director of Dairying, two chief instructors, twenty-six field men, two to five graders, three to five checkers of cream and milk tests, instructors at the Dairy School, Kingston.

Through them service of great value has been rendered to the producers of milk and manufacturers of dairy products throughout the province.

Our regular staff of twenty-two cheese factory instructors has rendered most valuable assistance in establishing uniform methods with resulting high-grade goods in the great majority of our cheese factories. Conditions were most unfavourable during a part of 1921 for the production of high quality cheese, and it was only through aggressive work on the part of the instruction staff that the quality was kept to a high level. A growing interest was manifest in the testing of individual cows as a result of the passing of the Dairy Standards Act at the 1921 Session of the Legislature. This branch furnished forms upon which to keep herd records to a great many producers, and a large number of leaflets were distributed on "The Care of Milk and Testing by the Babcock Method." Our staff of instructors kept in close touch with the export trade in Montreal, with a view to meeting the requirements of the trade.

The butter grading station in the municipal abattoir, Toronto, rendered a most valuable service to the sixty-nine creameries which took advantage of the service by submitting fourteen-pound samples of each churning for grading. 8,746 samples were graded. Certificates of quality were issued and the trade utilized the grading service to a growing extent in making purchases from the creameries. Storch tests and yeast and mold counts were made from time to time, and formed an important part of the grading service, which is coming to be more appreciated by both the manufacturers and merchants.

The butter grading service has demonstrated the absolute necessity for a higher quality raw material, if we are to produce butter which will hold its own in the world's markets.

Methods of manufacture and workmanship have shown much improvement in recent years.

Ontario is producing a greater quantity of high class butter than ever before; but the fact that this province consumes about the same quantity of butter as is produced here, enables the manufacturers to dispose of their product on local markets to advantage without going to additional expense found necessary in producing the high class article. Those who are looking to the future, and they are becoming greater in number, are installing up-to-date equipment and insisting upon high-grade raw material.

The checking up of the tests made in the cream buying stations, creameries and factories where payment was made on the butter fat basis, showed a great improvement in methods and more careful work on the part of the testers as compared to 1920, when this work was first begun.

The educational value of the Cream and Milk Purchase Act has been considerable, especially to the producers of cream. A comparison of the results obtained by our testers, and the operators in the factories, demonstrates the reliability of the Babcock test when performed by competent, careful operators.

The Dairy School at Kingston has rendered a valuable service to the dairy industry of Eastern Ontario through the instruction afforded in the regular course of three months, as well as the short courses for cheese and butter makers. The school is run as a creamery throughout the year and has established a name for high class goods, which results in most profitable returns to the producers of cream in the Kingston district.

Permanent certificates in butter and cheese making were granted to a number of men who had demonstrated the required efficiency through practical work.

Several new creameries were established, as well as a few cheese factories. Certificates of registration were granted to these.

During the fall and winter, the instructors attend a number of factory meetings, largely to assist in securing a high-grade raw material and to insure adequate equipment for the following season's operations.

FRUIT BRANCH

With the expiry of the leases last fall for the five demonstration orchards controlled by the fruit branch, this part of our work was discontinued for the present. One at least of these orchards was always used for the testing out of spray materials in a commercial way, and it was felt that this work must of necessity be continued as new materials and formulæ were being placed on the market every year.

In addition, with the growing shortage of manure from the larger centres and the consequent increase in the use of commercial fertilizers, the problem of the proper application of the latter for orchard purposes still remains for trial in this province. Some work has been carried out with grain, root and truck crops in recent years, but nothing of a satisfactory nature with the tree fruits.

With this in view, two orchards have been leased for a term of years wherein it is hoped to carry out sufficiently full tests to find something that will be of value to growers in the province. The orchards contain both light and heavy soils, consist of standard Ontario varieties at their prime bearing stage as well as one block of Baldwin and Stark just starting to bear.

This season, the orchards were pruned, sprayed and cultivated, and it is hoped to make the first application of fertilizer next spring. The tests will be made in co-operation with the Department of Chemistry of the Ontario Agricultural College.

Demonstration Storage Station.

At the last session of the Legislature, a special committee was appointed to study the marketing of our farm products. It was brought to their attention that a heavy loss occurred with our summer and fall apples through over-heating in the packages due largely to the climatic conditions of picking time, and that such loss was being prevented in other apple growing sections on the continent through pre-cooling in various types of storages. Following the discussion of the committee, the department constructed this summer a demonstration plant at Brighton, in the centre of the export apple section on Lake Ontario.

The building, formerly used as a dry or frost-proof apple storage, is situated on a Grand Trunk Railway siding, and within half a mile of the C.P.R. freight sheds. The upper two floors have been insulated throughout with from two to three inches of cork, and a mechanical ice plant of thirty tons capacity installed. The refrigerating machinery and freight elevator are operated by hydro current from the local substation. The manager reports as follows on the operation of the plant for the past three months:

The cold storage plant was sufficiently completed so that pre-cooling and storage operations could commence on September 10, 1921, and it is from this date that business transactions are recorded.

A variety of fruits and vegetables have been handled including plums, pears, apples, peppers and celery, with gratifying results considering that the peculiarities of each refrigerator room have had to be worked out with actual experience by constantly watching the temperatures and air currents. Also the growers have been confronted with a new proposition of "storage," which requires an entirely new system of handling their fruit in order to insure satisfactory results from cold

storage. In this respect, there is great need of educational work which should be judiciously carried out, especially prior to the storage season, in order to safeguard the growers from calamity and discouragement in the new adventure, and likewise, to preserve a reputation for the future development of cold storages.

Propaganda in form of advertising the plant has been carried out in all the local papers from Bowmanville to Trenton, besides articles through the columns of the agricultural press, also as far as possible constant interviews with the growers have been maintained to promote interest in the advantages of cold storage. The results of advertising have been shown by the number of visitors to the plant, which again is an excellent advertising medium. Since October 1, 1921, one hundred and ten visitors have been shown over the plant, and in all cases great satisfaction has been expressed with the establishment.

To date, the cold storage has been patronized by twenty-eight growers who have shipped fruit in from Bowmanville, Port Hope, Cobourg, Colborne, Smithfield, Wellington, Trenton, besides local consignments.

The cubical contents of the refrigerator rooms are as follows:

Lower Room	19,147 cu. ft.
Upper Small Room	10,833 "
Upper Large Room	26,133 "
Total	56,113 cu. ft.

Owing to the unavoidable loss of space in storing barrels in all three rooms due to head room and necessary circulatory channels, the capacity of the entire cold storage space is greatly lessened, which gives in round figures a capacity of approximately 7,000 barrels. These figures do not include the basement which holds approximately 4,000 barrels under ordinary frost-proof cool storage.

The following packages have been received in cold storage, and basement (common storage) :—

Apples—Cold Storage	5,180	
Common Storage	3,901	
	9,081	barrels.
Apples	49 x 11	baskets.
Apples	368	bushels.
Apples	458	boxes No. 1.
Celery	325	crates.
Peppers	106 x 11	baskets.
Peppers	25	crates.
Plums	5,073 x 11	baskets.
Pears	323 x 11	baskets.

These figures are considered very creditable as this business has taken place within less than three months. Another year the building will be inadequate to cope with the demand for cold storage, as already two-thirds of its present capacity is spoken for reservation.

Owing to the shortage in the crop of early varieties, it was impossible to test out the value of the storage for pre-cooling these fruits or for holding such kinds as Snows, Greenings and McIntosh for later markets.

Imperial Fruit Show.

Early in the summer, the department was advised that an Imperial Fruit Show would be held in London, England, in the fall of the present season, where apple growers from all parts of the Empire would meet in competition. An in-

vitation was received through the Federal Department, Fruit Division, asking Ontario to take part and this invitation was passed on to the growers through the press with the promise of the department to look after the shipping and placing of the fruit in London.

Owing to the distance and great expense involved, the department acted in co-operation with the Ontario Fruit Growers' Association in assembling both a display and a competitive exhibit, sending over some 237 cases selected from various parts of the province. Of these, seventy-eight cases were entered in the overseas classes and eighty cases in the British Empire classes. In the first classes, the prize list called for six boxes each of fourteen varieties, in which Ontario exhibited the following: Spy, Greening, King, Golden Russet, Snow, McIntosh, Stark, Newtown, Spitzenburg, Wealthy, Jonathan, Blenheim, and Wagner. Nine awards, including four firsts and five seconds were given to the above lots, which, in addition to the gold and silver medals, brought to Ontario the much coveted trophy awarded by the Fruit & Produce Exchange of Great Britain.

In the Empire classes where four entries were made of twenty boxes each, the judges decided that regardless of packing, Cox's Orange Pippin was the choicest dessert variety in the Show and Newtown Wonder the best cooker. As these varieties are not grown here, the prizes went largely to English growers, Ontario winning third prize in the cooking class with Greenings.

The Provincial display consisted of eighty cases of apples and pears and included some varieties that were not called for in the competition.

Northern Ontario Plant Breeding Station.

The work at the Experimental Station at Fort William was transferred to the Provincial Secretary's Department on October 1st of this year, the farm and buildings having always been used for the care of prisoners under that branch of the Government. It is expected that the work in hardy fruits and vegetables will be continued under the new arrangement though modified to some extent.

As a result of the investigations of the past year under the Department of Agriculture, a circular has been issued, giving recommendations on the care of the various fruits and the special varieties found hardy in Northern Ontario. This was widely distributed throughout the northern districts and should be a safe guide for intending planters there for many years to come, just as the lists of fruits recommended for southern Ontario by the department have long been recognized as the best authority for the growers there.

Horticultural Experiment Station, Vineland

Considerable new experimental work was started in the spring of 1921. The new projects include: "Interrelation of pruning, soil fertility and distance of planting in the peach"; "Height of heading in raspberries, in relation to vigour, crop production and cane support"; "Study of the effect of varying degrees of dormant pruning on the development of the apple." A six-acre Elberta orchard has been planted to study the first problem, an acre of Cuthbert raspberries for the second problem, and a six-acre apple orchard of the varieties Spy, Baldwin, McIntosh, Wealthy and Duchess for the third.

Very promising results are being obtained in the fruit breeding work. Several thousand peach seedlings fruited this season for the first time and selection of several promising seedlings has been made. Distribution of budded stock of an older seedling was made in the spring of 1921, to about fifteen growers in various parts of the Niagara district.

The strawberry hybrids have now been culled down to the most promising half-dozen. In particular, two early varieties and one late variety are extremely promising. The demand from growers for plants of these new varieties is already greater than the available supply.

In raspberries, one selection has shown up remarkably in the past season, so much so in fact that the supply to growers has had to be limited to a half-dozen plants each. This hybrid is a cross of Marlboro and Cuthbert. As compared with Cuthbert the plants are more vigorous, the fruit is larger, somewhat lighter in colour, of not quite as good quality, and so far as can be judged it is a heavier yielding variety than the Cuthbert. Gratifying progress has also been made in the breeding of grapes, gooseberries, blackberries, greenhouse cucumbers and tomatoes.

Thirty-five acres of additional land, adjoining the fifty already under lease, have been leased, thus providing for necessary expansion. A double cottage for labourers and two houses for members of the staff have been completed greatly relieving the house shortage.

In February, 1921, there was sent out from the Station the first issue of a monthly circular letter dealing with the work of the experiment station. Nine letters have been sent out to date, each letter dealing with some one particular phase of the work here. Approximately 2,700 fruit and vegetable growers are on the mailing list. Most of these growers are in the Niagara district and along the north shore of Lake Ontario between Hamilton and Toronto. The response to this circular letter has been very gratifying. The number of visitors has been many times greater than in any other year, as has also the number of inquiries for information by letter and telephone. Over four hundred growers visited the station on the occasion of the annual "Field Day" on August 11th, the great increase over the previous year being mainly due to the increased interest in the station.

Other Work.

This branch also co-operates with the Provincial Entomologist and Provincial Apiarist who are on the staff of the Ontario Agricultural College. Further reference to their work will be found in the college section of this report.

CO-OPERATION AND MARKETS

On the North American continent agricultural economics is permeating the activities of the Departments of Agriculture and Agricultural Colleges. More especially is the problem of economical marketing of farm products receiving scientific study. A knowledge of the underlying principles so gained, together with the accumulated practical experience of producers' organizations, both successful and unsuccessful, is affording a more solid basis for farmers' co-operative organizations, and is resulting in the formation of larger and more ambitious undertakings in the field of co-operative marketing.

The experiences of the farmers of California have helped to bring about the large commodity exchanges in the state of Michigan, the cheese federation of Wisconsin, the tobacco and cotton pools of the Southern States, the New York territory milk producers' federation, and similar marketing associations. Nation-wide marketing organizations are being projected, or are already formed, such as the fruit federation and the grain marketing corporation.

This movement towards co-operative marketing in the United States, in many cases under conditions generally similar to those in Ontario, is a factor in bringing about an advancement of co-operative organization in this province. It has been demonstrated that specialized farming is not an essential to the success of a co-operative, as might be supposed from the history of the grain growers of the Canadian West, and of the citrus growers of California. The basis of organization is rather that of a commodity. Consequently in Ontario there has been formed or projected the following commodity organizations:—

Tobacco—The Canadian Tobacco Growers Co-operative Association, Kingsville.

Tender Fruits—Niagara Peninsula Growers, Limited, Grimsby.

Honey—Ontario Honey Producers, Limited, head office, Toronto. Being organized.

Dairy Products—Ontario Co-operative Dairy Products, Limited, head office, Toronto. Being organized.

The Canadian Tobacco Growers Co-operative Association was organized in 1920. All members of the organization are under contract to deliver their tobacco to the Company for grading, drying and marketing. A large drier was installed in a commodious building in the town of Kingsville, and a large force of graders employed to handle the crop. As was to be expected some difficulties were encountered, and are still to be encountered; but under the circumstances the Company is making good progress, the growers being convinced of the necessity of a co-operative marketing organization if the industry in Ontario is to be preserved. About 400 growers attended the last annual meeting and the Company hopes in the near future to have the bulk of the Ontario crop under contract.

The Niagara Peninsula Growers, Limited, was incorporated by special legislation in 1921. The growers here are also under contract and during the first year of operation the Company marketed fruit to the value of approximately $1,500,000 with a surprisingly small amount of dissatisfaction on the part of the growers. The grape growers of the Niagara Peninsula have a separate co-operative organization which, however, is closely linked to the Niagara Peninsula Growers, virtually comprising one organization. Resulting from the organiz-

ation of this Company are benefits not only to the producers in the Company but to the consuming public. Under individual marketing a proper distribution of fruit to the various markets seemed impossible, resulting in many towns at times being without a sufficient supply, while others were oversupplied. Under individual marketing consumers are not advised in advance as to the time various fruits will be on the market in maximum quantities. The Company is preparing an advertising campaign to aid consumers in planning their canning operations, giving advice as to the various varieties of the different fruits and otherwise helping to prepare and extend the home market. With the bulk of the tender fruit under its control a more equitable distribution of the crop is being worked out and distant markets in Nova Scotia and the Western Provinces are being catered to. Marked progress is being made in the standardization of grades. Altogether the Company in its first year of operation has amply demonstrated its essential value as a marketing organization.

In all this work the Department aims to assist in the formation of organizations actually under the control of the producers and in no sense under the control of the Government.

Smaller Co-operatives.

The smaller co-operative organizations in the Province give a basis for the larger federations. The extent of these is perhaps not fully realized, for the reason that co-operative organizations are not required to make returns to the Government as in some of the other Provinces, and therefore complete statistics are not available. A large amount of co-operative buying and selling is done through unincorporated organizations or clubs, but the extent of established co-operative concerns is indicated by the number of Companies incorporated under Part XI. A of the Ontario Companies Act.

Co-operative concerns incorporated:—

1917	14	1920	46
1918	32	1921	28
1919	59		
		Total	179

These are divided as to commodities as follows:—

Dairy Products—20.
- *Beachville Co-operative Association, Beachville.
- Producers Creamery Company of La Valee, La Valee.
- Burford Milk Producers Company, Limited, Burford.
- Square Deal Co-operative Association of S. Cayuga, Limited, Cayuga.
- Champion Cheese and Butter Co-operative Company, Limited, Madoc.
- Canboro Cheese and Butter Company, Canboro.
- Kenora Dairy Co-operative Association, Kenora.
- Shelburne Creamery and Produce Company, Limited, Shelburne.
- Twin City Milk Producers Association, Kitchener.
- Holleford Co-operative Cheese Association, Limited, Hartington.
- United Dairymen Co-operative, Limited, Peterboro.
- Oldcastle Farmers Co-operative Association, Oldcastle.
- Eldorado Cheese and Butter Co-operative Company, Limited, Madoc.
- Harwood Co-operative Creamery Company, Limited, Harwood.
- *Oakdale Co-operative Dairy Co., Limited, R.R. No. 1, Warsaw.
- *Vandecar Co-operative Cheese and Butter Company, Limited, Vandecar.
- *Thorndale Co-operative Dairy Company, Limited, Thorndale.
- Beachville Co-operative Dairy Company, Limited, Beachville.
- *Brant Co-operative Dairy Company, Brantford.
- *Beaver Cheese and Butter Company, Campbellford.

Fruit—4.
- Niagara Peninsula Growers, Limited, Grimsby.
- *St. George Co-operative Fruit Growers, Limited, St. George.
- *Waterford Co-operative Growers, Limited, Waterford.
- *Burlington Co-operative Fruit Growers, Burlington.

*Incorporated during 1921.

Live Stock—4.

Canadian Holstein Sales Company, Limited, Simcoe.
Maple Leaf Co-operative Association, Palmerston.
L. C. and D. Co-operative Company, Limited, Ilderton.
*Keene Co-operative Shippers, Limited, Keene.

Grain—13.

Bloomfield Milling Company Co-operative, Bloomfield.
Kenora District Co-operative Clover Seed Growers Association, Oxdrift.
Linwood Farmers Co-operative Company, Limited, Linwood.
Ontario Corn Growers Co-operative, Limited, Chatham.
Beechwood Farmers Co-operative Club, Ridgetown.
Calabogie Co-operative Milling Company, Limited, Calabogie.
Rainy River Co-operative Seed Growers, Limited, Emo.
*Cottam Farmers, Limited, Cottam.
*Kerwood Farmers Co-operative Company, Limited, Kerwood.
*Woodbridge Farmers Co-operative Company, Limited, Woodbridge.
*Inwood Farmers Co-operative Elevator Company, Limited, Inwood.
Baxter Grain and Stock Co-operative Company, Limited, Baxter.

Produce—Eggs, Potatoes, etc.—6.

Leeds Farmers Co-operative, Limited, Lansdowne.
Woodstock District Farmers Co-operative Association, Limited, Woodstock.
Orangeville Co-operative Marketing Company, Orangeville.
Lanark Co-operative, Limited, Perth.
Dryden Certified Seed Potato Growers Co-operative Association, Limited, Dryden.
*Oxford Farmers Produce Company, Limited, Woodstock.

Stores—16.

Algoma Co-operative Society, Limited, Sault Ste. Marie.
Peterboro Co-operative Society, Peterboro.
Niagara Citizens Co-operative Association, Niagara Falls.
Gananoque Co-operative Society, Limited, Gananoque.
Valley City Co-operative Society, Limited, Dundas.
Stratford Co-operative Society, Stratford.
Fort Frances Union Co-operative Company, Limited, Fort Frances.
Midland Co-operative Society, Limited, Midland.
Workman's Co-operative Association of Fort William, Fort William.
Guilds Co-operative Store Company, Limited, Blenheim.
Rideau Co-operative Company, Limited, Smith's Falls.
Mount Hamilton Co-operative Society, Limited, Mount Hamilton.
London Co-operative Stores, Limited, London.
Border Cities Co-operative Society, Limited, Niagara Falls.
*Brantford Industrial Co-operative Society, Brantford.
*Bridgeburg Co-operative Society, Bridgeburg.

General—111.

Note.—These include organizations handling one or more of the above commodities or others not mentioned.

Burgessville Farmers Co-operative Club, Burgessville.
Brant Farmers Co-operative Society, Limited, 267 Colborne St., Brantford.
Charlesville Co-operative Company, Limited, Charlesville.
The Co-operative De Rockland, Limited, Rockland.
The Co-operative Supply Company, Kingsville.
Domville Co-operative Company, Limited, Domville.
Hawtry Co-operative Association, Hawtry.
Luton Farmers Co-operative Club, Limited, Dunboyne.
West End Co-operative Society of Sault Ste. Marie, Sault Ste. Marie.
Alfred Co-operative Association, Alfred.
The Amherstburg Farmers Co-operative Association, Amherstburg.
Beamsville District Farmers Co-operative Club, Beamsville.
Bainsville Farmers Co-operative Company, Bainsville.
Curran Co-operative Association, Curran.
Camden Farmers Co-operative Association, Camden.
Eden Co-operative Company, Limited, Eden.
Enterprise Farmers Co-operative Association, Enterprise.
Co-operative Association of Fournier, Fournier.
Frontenac Farmers Co-operative Association, Kingston.
Kent Bridge Farmers Co-operative Society, Kent Bridge
Co-operative Association of Lefaivre, Lefaivre.
Lambeth Farmers Co-operative Association, Lambeth.
Longueil Farmers Co-operative Association, L'Orignal.
Northern Co-operative Company, Limited, Rydal Bank.
Norfolk Co-operative Association, Simcoe.

General.—*Continued.*

Odessa Farmers Co-operative Association, Odessa.
Co-operative Association of Plantagenet, Plantagenet.
Progressive Farmers Co-operative Association, Norwich.
Richmond Farmers Co-operative Association, Napanee.
Roblindale Farmers Co-operative Association, Roblindale.
Co-operative Association of St. Francis, St. Francis.
St. Isidore Co-operative Association, St. Isidore.
Tamworth Farmers Co-operative Association, Tamworth.
Wilton Farmers Co-operative Association, Wilton.
Ailsa Craig Farmers Co-operative Company, Limited, Ailsa Craig.
The Bonfield Co-operative and Trading Company, Limited, Bonfield.
Casselman Co-operative Association, Casselman.
Cranbrook Farmers Co-operative Company, Cranbrook.
Delmer Farmers Co-operative Club, Delmer.
Eberts Co-operative Company, Eberts.
Embrum Co-operative Association, Embrum.
The Harrow Farmers Co-operative Association, Harrow.
Forest United Farmers Co-operative Association, Forest.
Lemieux Co-operative Association, Lemieux.
Locust Hill Co-operative Association, Limited, Locust Hill.
Lakeview Farmers Co-operative Club, Limited, Lakeview.
Marionville Co-operative Association, Marionville.
Marlbank Co-operative Association, Marlbank.
Portland Township Farmers Co-operative Company, Limited.
Rose Corner Co-operative Association, Rose Corner.
Ramsey Farmers Co-operative Club, Limited, Almonte.
Co-operative Association of St. Amour, St. Amour.
Springfield Farmers Co-operative Club, Limited, Springfield.
South Indian Co-operative Association, South Indian.
Co-operative Association of Southwold Station, Limited, Southwold Station.
Tilbury Farmers Co-operative Company, Limited, Tilbury.
Wendover Co-operative Association, Wendover.
Watford Farmers Co-operative Association, Watofrd.
Edwardsburg Farmers Co-operative Company, Limited, Edwardsburg.
Howard Farmers Co-operative Society, Ridgetown.
New Liskeard Farmers Co-operative Company, Limited, New Liskeard.
Ontario Co-operative Building Society, Limited, 159 Church St., Toronto.
Co-operative Association of Benoit, Benoit.
Co-operative Association of Crysler, Crysler.
Charlton and District Farmers Co-operative Company, Limited, Charlton.
Schomberg Farmers Co-operative Company, Limited, Schomberg.
Levert Co-operative Company, Limited, Warren.
Hearst Farmers Co-operative Company, Limited, Hearst.
Bonne Entente Co-operative Association, St. Charles.
Pendleton Co-operative Association, Pendleton.
Co-operative Association of Bourget, Bourget.
Eastwood Farmers Co-operative Association, Eastwood.
Cochrane Co-operative Company, Limited, Cochrane.
Maple Farmers Co-operative Company, Limited, Maple.
McNab Farmers Club, McNab.
South Augusta Farmers Co-operative Club, South Augusta.
Exeter United Farmers Co-operative Company, Limited, Exeter.
Alexandria Farmers Co-operative Company, Limited, Alexandria.
Lyndhurst Farmers Co-operative Company, Limited, Lyndhurst.
Corinth Farmers Co-operative Club, Corinth.
Blenheim Co-operative Company, Limited, Blenheim.
Caledonia Co-operative Association, Caledonia.
Co-operative Association of St. Bernardin, St. Bernardin.
Co-operative Association of Clarence, Clarence.
The Newmarket Farmers Co-operative Company, Limited, Newmarket.
The Queensville Farmers Co-operative Company, Limited, Queensville.
Orono Farmers Co-operative Company, Limited, Orono.
*Parham Farmers Co-operative Company, Limised, Parham.
Guelph Rural Co-operative, Limited, Guelph.
Cassburn Co-operative Association, Cassburn.
Nottawasaga Co-operative Company, Limited, Creemore.
Woodstock Co-operative Society, Limited, Woodstock.
West Hawkesbury Co-operative Association, West Hawkesbury.
Stayner Farmers Co-operative Company, Limited, Stayner.

General.—*Continued.*

Hillsburg Co-operative, Limited, Hillsburg.
Grey Farmers Co-operative Company, Limited, Owen Sound.
Duntroon Farmers Co-operative Company, Limited, Duntroon.
Caradoc Farmers Co-operative Company, Mount Brydges.
Co-operative Skirt and Dress Manufacturing Company, Limited, Toronto.
Cataract Co-operative Company, Limited, Fenelon Falls.
Komoka Co-operative Lighting Company, Komoka.
Smithville Farmers, Limited, Smithville.
*Centralia Farmers Co-operative Company, Limited, Centralia.
*Orford Farmers Co-operative Company, Limited, Muirkirk.
*Walton Farmers Co-operative Company, Limited, Walton.
*Merlin Farmers Co-operative Company, Limited, Merlin.
*Northern Farmers Co-operative Company, Limited, Englehart.
*Oxdrift Co-operative Company, Limited, Oxdrift.
*Cosby-Martland Co-operative Company, Limited, Noelville.
*Verschoyle Farmers Co-operative Company, Limited, Mount Elgin.
*Burford United Farmers Co-operative Company, Limited, Burford.
*Brigden Co-operative Company, Limited, Brigden.
*Incorporated during 1921.

Incorporated Co-operatives are distributed among the Counties as follows:—

Algoma	3	Middlesex	8
Brant	6	Nipissing	3
Carleton	1	Norfolk	3
Dufferin	2	Northumberland	2
Durham	1	Oxford	12
Elgin	6	Perth	1
Essex	6	Peterboro	4
Frontenac	4	Prince Edward	1
Grenville	3	Prescott and Russell	26
Glengarry	2	Rainy River	3
Grey	1	Renfrew	1
Haldimand	3	Simcoe	5
Halton	1	Stormont	1
Hastings	3	Sudbury	2
Huron	4	Timiskaming	5
Kenora	4	Thunder Bay	1
Kent	10	Victoria	1
Lambton	5	Waterloo	2
Lanark	3	Welland	3
Leeds	3	Wellington	3
Lennox and Addington	7	Wentworth	2
Lincoln	4	York	8

The following Counties are without incorporated Co-operative Companies:—

Bruce.	Ontario.
Manitoulin.	Peel.
Muskoka and Parry Sound.	Victoria.

In addition to the above incorporated co-operatives there is an undetermined number of Companies organized previous to the enactment of Part XIA of The Ontario Companies Act, but which are farmer owned and to all intents and purposes are co-operative.

Among the local co-operative organizations are a considerable number which are apparently permanent, and are efficiently meeting a need in the community where they are established. A few instances might illustrate.

(a) The Kenora District Co-operative Clover Seed Growers Association. The district here is noted for the production of clover seeds, and to take care of the trade the Company was organized in 1918. A power cleaning plant has been installed and the seed marketed all over Canada and exported. The Company has been instrumental in creating and maintaining a reputation for high quality seeds of uniform grades. The success of this Company has encouraged the formation of other seed producing centres in Northern Ontario.

(b) Sudbury Co-operative Creamery Company, Limited. Organized in 1916, and operated for the first two years under serious difficulties. These difficulties were gradually overcome, and to-day the Company is operating one of the best Creamery plants in the Province and serving a large territory in the Sudbury district. The Company proposes to extend its operations in the near future and to include a retail milk and ice cream business. The Company has a paid up capital of $12,000 and last year manufactured 155,000 pounds of butter for about 300 patrons.

(c) Pelee Island Co-operative Association. A small Association established some years ago for the purpose of marketing the products of the Island. Because of the fact that the Island is almost entirely isolated during the winter season, the difficulty of maintaining a permanent manager is apparent. In fact the Company has changed its manager almost every season, but in spite of this fact and its effect on the efficiency of the organization the Company has remained in existence from year to year, and has reached the stage where a permanent manager has been employed for the next three years. Live stock, grains, potatoes, eggs, early vegetables, and in fact the bulk of the products of the Island are handled. Because of the isolated situation, individual marketing here is extremely unsatisfactory and the co-operative organization gives promise of great usefulness.

(d) Erie Co-operative Company. Previous mention has been made of the activities of this Company, in marketing the early vegetables, onions, and fruit, of the Leamington district. Between $800,000 and $1,000,000 worth of perishable and semi-perishable products is marketed every year. The completeness of the organization is indicated by the fact that 96% of the growers of these products in the district are members of the Company. Some five smaller Farmers' Companies in adjacent districts have amalgamated with the Company and independent competitors have been entirely eliminated. The Company has established its own wholesale house in the City of Windsor.

(e) Kerwood Farmers Co-operative Company, Limited. This Company has for its object that of operating a local elevator and seed cleaning plant. During the first nine and a half months, and before the cleaning machinery was installed 21,000 bushels of wheat were sold, and about $2,000 worth, per month, of flour and feed handled. With the installation of seed cleaning machinery, whereby the grain can be properly graded before shipment, much more satisfactory results are expected to follow.

Numerous other Co-operatives, some large, some small, are conducting business in all parts of the Province and farmers generally are becoming better acquainted with the essentials necessary to success in their Co-operative undertakings.

Non-incorporated Organizations.

A large amount of trading is carried on through voluntary organizations, such as Farmers Clubs, Live Stock Shipping Associations, and the like. A large proportion of these do business with the United Farmers Co-operative Company, Limited, a province-wide company organized to serve the needs of those Clubs. A large portion of this business is in the buying of supplies, such as feeds, fertilizers, binder twine, machinery, groceries, and in fact everything the farmer buys. About 1,500 Farmers Clubs have been organized in the past throughout the Province, a large majority of which have, at one time or another, either bought or sold co-operatively. An increasing amount of marketing

of farm products is being carried on through these Clubs, notably in live stock shipping. About 40% of the amount of stock marketed at the Union Stock Yards, Toronto, is marketed co-operatively, and amounts to approximately $10,000,000 per year. The Live Stock Department of the United Farmers Co-operative Company handles the larger portion of the co-operative shipments in the yards, and through that organization important changes, of benefit to the shippers, have been brought about in the marketing of live stock. One of these is the ability of the Company to more or less regulate the flow of stock of its shippers to the market. Many other advantages result from the Co-operative Company being on the market both at Toronto and Montreal.

Among the other marketing activities carried on through voluntary organizations, are grain shipping, egg marketing, cream selling, and seed marketing. The United Farmers Co-operative Company has a Department in charge of each of these commodities which buys and sells not only for Clubs but for individual producers as well.

The following are the Egg Circles at present operating in the Province:—

Bright	Woodstock	Lanark
Brookdale	Wellington	Lansdowne
Burgoyne	Pleasant Bay	Lyndhurst
Corinth	Alexandria	Madoc
Dobbinton	Alfred	Marmora
Eden	Almonte	Maxville
Port Elgin	Athens	McDonald's Corners
Embro	Carleton Place	Millbrook
Embro Maple Leaf	Casselman	Middleville
Harrington	Clayton	Norwood
Hepworth	Cambray	Perth
Hickson	Douro	Pendleton
Innerkip	Dunvegan	Plantagenet
Lakeside	English Line	Renfrew
Norwich	Fallbrook	Smith's Falls
Parkhead	Hammond	Springbrook
Tara	Harper	Watson's Corners
Tavistock	Havelock	Welcome
Tiverton	Hopetown	Wellman's Corners
Underwood	Indian River	Wendover

In connection with egg marketing it might be stated that there are 75 commercial egg producers in the Province. These formed an organization during the year and at present are canvassing the situation as to a co-operative marketing organization for the commercial egg producers.

Seed Cleaning Plants.

The Kerwood Farmers Co-operative Company, Limited, and the Mersea Farmers Co-operative Company, Limited, Leamington, have appleid for loans to assist in establishing seed cleaning plants. Both of these Companies own a local elevator or warehouse and are engaged in the marketing of grain. Although The Marketing Loan Act has not resulted in many loans, the result has been that quite a number of power plants have been installed without any aid from the Government. There are a total of some 500 grain and seed cleaning power machines in operation in the Province. It is estimated that between 75 and 80 of these are used exclusively in the flax mills, 100 are used in the seed houses for cleaning grasses and clover seeds, and almost all of the remainder are used as grain cleaners in the elevators and flour mills, but not for cleaning the cereal seeds.

At the following points are seed cleaning plants owned and operated by Farmers' Associations:—

Aylmer Co-operative Company, Aylmer.
Luton Co-operative Company, Aylmer.
Cottam Farmers, Limited, Cottam.
Erie Farmers Association, Selkirk.
Erie Farmers Association, Nelles Corners.
Hastings Banner Oats Association, Stirling.
Kent Farmers Produce Company, Blenheim.
Kenora Clover Seed Growers Co-operative Association, Oxdrift.
Rainy River Co-operative Seed Growers, Emo.
Victoria County Co-operative Company, Lindsay.
United Farmers Co-operative Company, Toronto.
Essex Farmers, Limited, Essex.
Co-operative Supply Company, Kingsville.
Tara Seed Cleaning Plant, Tara.
Ilderton Seed Cleaning Plant, Ilderton.

Community Halls

Under The Community Halls Act, 1919, and 1920, the following Community Halls have been completed and grants paid thereon:—

Year	Name	Place	Total Value	
			$ c.	$ c.
1920	Binbrook Community Hall	Binbrook	14,000 00	2,000 00
1920	Cobden Community Hall	Cobden	16,000 00	2,000 00
1921	Lakefield Community Hall	Lakefield	38,000 00	2,000 00
1921	Blyth Community Hall	Blyth	23,000 00	2,000 00
1921	Raymond Community Hall	Raymond	4,029 34	1,007 33
1921	Humberstone Community Park	Humberstone Twp.	5,407 80	1,351 95
1921	S. Norwich Community Hall and Athletic Field	Otterville	9,793 16	2,000 00

At the following points grants have been applied for and Halls and Athletic Fields are in course of construction:—

Dunchurch
Londesboro
Moonstone
Kimberley
Slate River
Bancroft
Eady
Vandorf
Caradoc Township
Currie's Crossing
Carlisle
Craithie
Mindemoya Consolidated School
Dorion Consolidated School
Falls View Consolidated School
Humber Heights Consolidated School
Tamworth Continuation School
Stoney Creek Athletic Field
Tottenham Athletic Field
Evanturel
Marmora
Mount Hope
Percy Township
Quibell
Waterdown

Inquiries have been received from a large number of additional places, and the nature of these inquiries would indicate that the serious intention of the communities is to erect Community Halls. Special mention should be made of the splendid efforts of a number of sections in Northern Ontario, which are erecting modern Consolidated Schools containing Community Halls, buildings which would be a credit to wealthier sections in the older parts of the Province with ten times the assessment of some of these Northern sections.

As a result of the establishment of Community Halls and Athletic Fields a much broader social life is being developed in the open country. In every case where a Hall has been erected splendid illustrations could be given of the re-

sults on the community life of the districts. A letter received from one of the young men in a Community Hall section will serve to illustrate what is happening all over the Province.

"I am writing to tell you about one of the many good times we have had on our Athletic Field during the short time it has been in use.

This section, like many other country places in the Province, had no grounds suitable for baseball, football, softball, tennis, etc., until we were able to procure our Community Hall grounds as provided by the Act passed by the Drury Government; and the young people appreciate it to the fullest extent. We always had the hardest time hunting for a pasture field level enough to play baseball on, and even when we found the field it was usually too rough to play good ball on. Now we can have our diamond worked down and rolled and smoothed off, and it is always ready for us all season.

Last year we had a good ball team because we got started to practise early on our new diamond, and as the season came on we organized a Baseball League comprised of seven teams, and many good games were run off. The Junior League also ran off a series of games and our diamond was declared the best in the League.

We closed the season with a Tournament and invited five visiting teams to compete. The ladies had a large, well-decorated booth on the grounds and did a rushing business serving cold lunches, cold drinks, candies, etc. The weather was perfect and by the time the games were started about 600 people had arrived and many cars were parked in and around the grounds, as everybody for miles around took a holiday to enjoy the sports. The games started at 10 a.m. and continued throughout the day till 6.30 p.m. The teams were fairly evenly matched and each played its best; three prizes were given of One Hundred, Sixty, and Forty Dollars each, the home team winning the latter. The whole day was a great success, and was the best Tournament in the County last year and we are planning for a bigger and better one this year. In fact everybody agrees that it was the greatest day ever held in this section and declares that it was 'more fun' than the County Fair. From the gate receipts the team cleared enough over the prize money to pay for their baseball suits, and half the booth receipts were handed over to the ladies for looking after the refreshment booth.

This is just one of the many good times we have had on our grounds already and as the years go by we will have many more both on the Athletic Field and in our Community Hall. They are undoubtedly an inestimable asset to our community life here."

Toronto Exhibition Exhibit.

A rather unique exhibit was erected by the Department of Agriculture, illustrating a Co-operative Community Centre, equipped with its co-operative marketing plants, such as creamery, elevator, seed cleaning plant, apple grading warehouse, and live stock shipping pens. These were grouped near the railroad station, a train in operation travelling over the road. At the cross-roads was situated the local store, the school, the community hall and other village buildings, while on the outskirts a fair ground with its equipment of building and driving track was in evidence. Further along the road was a farmstead with full set of buildings, the farm garden and orchard, cultivated fields and pasture lot, the latter with its running brook and shade trees. At night all the buildings were lighted. The whole presented a picture of an attractive rural centre properly co-ordinating the *production* and initial *marketing* of the agricultural products of the district.

International Hay and Grain Show, Chicago.

As in previous years Ontario exhibits for the above were located and placed in their proper classes for the competitors. Arrangements were made to overcome the difficulties in connection with the corn embargo. The following prizes were awarded to Ontario exhibitors.

Dent Corn	R. B. Cohoe, South Woodslee
Oats	A. E. Browning, Oxdrift.
Flint Corn	A. McDonald & Son, Chatham.

The usual work of special lectures in connection with the Short Courses over the province was carried on, the lectures consisting of outlines of the marketing system and the principles underlying co-operative marketing. Lectures were also given at the Vegetable Short Course at the Ontario Agricultural College and at other gatherings.

AGRICULTURAL REPRESENTATIVE BRANCH

The work of the Agricultural Representative, embracing as it does everything which pertains to the advancement and development of agriculture and rural conditions, is calculated sooner or later to bring him, directly or indirectly, in contact with every farmer and his family in the county.

There were two new offices opened during the past year, one in Perth County at Stratford, and one in South Simcoe at Alliston, the latter being the second office in Simcoe County. These additions increase the number of Agricultural Representatives in the province to fifty. Permanent assistants were not furnished during 1921 except in a few of the larger counties, or where special work was being undertaken. Temporary assistants were furnished during the periods covered by the school fairs and winter courses in agriculture.

The following tabulated statement gives some interesting statistics in connection with each office:

County	No. of Letters Received	No. of Letters Written	No. of Circular Letters Mailed	No. of Incoming Phone Calls	No. of Visitors at Office	No. of Meetings Held in Office	No. of Bulletins and Reports Distributed	No. of Miles travelled by Automobile
Algoma	1,908	1,896	1,900	2,507	1,936	42	485	8,200
Brant	1,086	1,617	4,570	515	837	30	87	.....
Bruce	3,100	1,328	3,437	2,500	2,100	15	1,000	21,000
Carleton	725	850	4,500	1,400	800	100	1,100	9,284
Dufferin	4,500	2,800	4,500	2,000	4,300	10	500	6,000
Dundas	1,420	1,243	4,900	1,136	1,475	65	200	9,200
Durham	2,400	2,680	6,350	375	1,025	60	790	12,000
Elgin	2,500	2,000	2,500	3,000	1,950	30	500	10,800
Essex	2,304	2,640	6,500	1,600	2,300	36	684	18,500
Frontenac	2,085	600	4,622	950	1,344	60	585	7,290
Grenville	2,200	2,500	3,500	1,800	1,200	20	600	8,000
Glengarry	1,764	2,456	4,000	376	2,600	53	.....	7,500
Grey	1,888	2,235	8,400	499	1,076	50	489	18,000
Haldimand	1,076	1,145	980	1,909	1,476	12	340	6,960
Halton	2,008	2,234	2,300	671	1,037	16	780	20,000
Hastings	1,153	934	1,672	557	1,170	110	200	9,675
Huron	1,445	1,732	2,107	300	500	25	2,500	15,000
Kenora	875	710	300	.....	300	.....	300	5,500
Kent	1,284	1,355	2,000	1,950	2,300	12	300	12,000
Lambton	1,798	2,046	2,088	1,245	1,952	9	300	15,000
Lanark	1,572	1,344	670	650	1,128	53	92	13,500
Leeds	3,300	2,800	2,500	2,000	1,400	50	700	9,000
Lennox and Addington	1,785	1,249	1,700	1,600	1,200	32	500	8,000
Lincoln	2,350	3,115	4,839	945	1,227	120	476	12,000
Manitoulin	935	1,101	5	1,500	4,110	25	110	8,700
Middlesex	1,735	2,484	4,537	1,807	3,694	38	2,812	16,500
Muskoka and Parry Sound	.....	1,450	1,860	.....	.....	20	550	5,150
Norfolk	2,780	2,474	6,872	2,050	2,382	37	1,209	8,723
Northumberland	1,129	879	990	.....	.....	11	.....	.....
Ontario	1,450	1,600	5,500	1,400	1,000	50	1,450	13,500
Oxford	2,200	2,340	2,500	675	2,660	29	65	6,228
Peel	2,600	2,750	5,000	5,500	3,300	40	3,500	11,000
*Perth	350	400	150	360	350	12	100	5,600
Peterboro	1,025	1,150	3,000	375	350	100	50	7,500
Prescott and Russell	1,236	1,202	1,305	500	450	8	350	8,564
Prince Edward	1,301	1,127	2,393	2,300	2,450	36	1,400	14,000
Rainy River	1,285	2,499	1,664	3,029	3,925	13	551	7,500
Renfrew	1,978	1,751	3,807	701	985	37	300	7,501
Simcoe	3,000	3,000	3,000	1,000	3,000	60	500	13,700
Sudbury	1,261	1,016	3,613	910	804	3	411	7,600
Temiskaming	1,155	1,505	1,300	.....	1,039	10	160	.....
Thunder Bay:								
Fort William	798	593	537	910	905	15	250	5,640
Port Arthur	900	650	1,650	1,000	1,700	12	654	6,650
Victoria	1,525	1,100	3,085	.....	1,225	107	.....	6,295
Waterloo	1,684	1,188	2,521	1,530	1,873	25	200	11,178
Welland	2,000	1,600	1,800	2,300	2,500	35	470	8,500
Wellington	1,485	1,821	1,631	558	1,875	33	1,064	10,140
Wentworth	1,800	2,800	14,000	300	6,500	85	7,200	13,000
York	1,830	2,350	14,000	900	1,500	45	.....	11,000
Total	83,967	84,339	167,555	60,090	85,210	1,896	36,864	476,568
Average	1,749	1,723	3,419	1,365	1,812	39	819	10,360

* Statistics cover period June 1st, 1921–Oct. 31st, 1921.

Meetings Addressed by Agricultural Representatives.

The following is a list of meetings addressed by the Representative for Lambton County, together with subjects discussed and attendance, and is quite typical of the nature and extent of the work throughout the province:—

Date.	Place.	Nature of Meeting.	Subject.	Attendance.
Nov. 17	Sarnia	Lambton Beekeepers	Bees	.....
" 23	Oil Springs	Poultry Association organized	Poultrykeeping	16
" 24	Alvinston	" " "	"	23
" 25	Brigden	" " "	"	36
" 26	Petrolia	" " "	"	.....
Dec. 13	Moore Centre	Farmers' Club	Short Course	15
" 16	Sarnia	School Trustee Association	School Fairs	.....
Jan. 12	Petrolia	Lambton Corn Growers	Prize List	25
" 13	"	Lambton Live Stock Breeders	Catalogue	20
" 20	Dawn Twp	Dawn School Fair Association	School Fair	.....
" 27	Sarnia	County Council	Advisory Council	.....
" 29	Sarnia	" "	" "	.....
Feb. 1	Petrolia	Lambton County Co-operative	Annual Meeting	.....
" 15	Brigden	Poultry Association	Poultry Culling	29
" 16	Alvinston	" "	" "	14
" 17	Petrolia	" "	" "	19
" 18	Oil Springs	" "	" "	40
" 20	Moore Centre	School Trustees and Women's Institutes	School Fair organization	.....
" 21	Blackwell	Vegetable Growers'	Vegetable Growing	97
" 22	Bosanquet Twp	Farmers' Club	Scrub Bull Campaign	12
" 23	" "	" "	" " "	27
" 24	" "	" "	" " "	45
" 25	" "	" "	" " "	18
" 23	Wyoming	Fruit Grower's Association	Central Marketing Association	32
" 24	Watford	" " "	Packing demonstration	12
" 25	Wyoming	" " "	" "	22
Mar. 22	Forest	" " "	Central Marketing	32
" 23	Wyoming	" " "	" "	32
" 28	Watford	" " "	" "	18
" 29	Inwood	" " "	" "	37
Apr. 15	Uttoxeter	Trustees and Women's Institutes	School Fair Organization	.....
May 26	Dawn Twp	S.S. No. 8, Field Day	Instruction in Live Stock Judging	.....
June 4	Petrolia	Corn Grower's Association	Marketing Association	18
" 16	Forest	Fall Fair Board	Fall Fairs and School Fairs	12
" 17	Watford	Fall Fair Board	Fall Fairs and School Fairs	8
" 20	Wanstead	Farmers' Picnic	.....	900
" 22	Alvinston	" "	.....	800
" 25	Trott's Grove	School Picnic	.....	300
" 29	Forest	Fall Fair Board	School Fair	10
" 30	Petrolia	Live Stock Breeders	Shipment of Cattle to England for market	57
July 2	"	Live Stock Breeders' Association	Annual Meeting	22
Aug. 4	Inwood	Farmers' Picnic	.....	800
" 11	Shetland	Shetland Farmers' Picnic	.....	3,000
" 15	Colinville	Women's Institute	Poultry Culling	27
" 15	Providence	Women's Institute	Poultry Culling	37
" 15	Moore Centre	Women's Institute	Poultry Culling	20
" 16	Sarnia Twp	Women's Institute	Poultry Culling	22

Date.		Place.	Nature of Meeting.	Subject.	Attendance.
Aug.	16	Sarnia Twp.—*Cont.*	Women's Institute	Poultry Culling Demonstration	19
"	16	" "	" "	Poultry Culling Demonstration	8
"	17	Wilkesport	" "	Poultry Culling Demonstration	23
"	17	Sombra	" "	Poultry Culling Demonstration	6
"	17	Thornyhurst	" "	Poultry Culling Demonstration	17
"	18	Becher	" "	Poultry Culling Demonstration	2
"	18	Sombra	" "	Poultry Culling Demonstration	19
"	18	"	" "	Poultry Culling Demonstration	4
"	19	Bentpath	" "	Poultry Culling Demonstration	.....
"	19	Florence	" "	Poultry Culling Demonstration	21
"	19	Aughrim	" "	Poultry Culling Demonstration	27
"	20	Uttoxeter	" "	Poultry Culling Demonstration	21
"	20	Thedford	" "	Poultry Culling Demonstration	23
Sept.	15	Rutherford	School Fair Association	Concert	.....
"	28	Arkona	" " "	"	.....
Oct.	22	Petrolia	Corn Growers' Association	Annual Show	18
"	27	Alvinston	Plowmen's Association	Annual Match and Banquet	.....

The following comments on office work taken from the report of the Representative in Victoria County will convey some idea of the great variety of detailed office work the average Representative is called upon to perform:

(a) Stock Registration:

A supply of all the various forms for the registration and transferring of pure bred stock is kept on hand. Breeders find this service particularly convenient. Many forms are filled out in this office:

(b) Articles for the Press:

During the year a number of articles on various subjects have been written for the press. Some editors appreciate these articles while others rather grudgingly accept some and others refuse.

(c) Reports:

A weekly report of activities to the Department, Toronto.
A weekly report on Agricultural conditions,
Monthly report to the Dominion Entomologist,
Monthly report to the Bureau of Statistics,
Other special reports to time to time.

(d) Other Office Duties:

The examination of clover and grass seed samples for impurities.
Testing seed samples for germination power.
Identification of weeds, seeds and insects.
Ordering Black-leg Vaccine.
Sending in samples of well water for examination.
Sending in samples of milk to be tested for disease germs.

The following taken from the daily office register will give some idea of the varied nature of Agricultural Representative work:

Place boy on farm.
Asked to examine sample of feed and tell why hogs refuse it.
Asked for information re government stock car to Western Canada.
Information re stallion enrolment.
Request to fill out registration forms.
Examine sample of clover seed.
Request for material for a debate.
Requested to order Black-leg Vaccine,
Sample of milk to be tested.
Request for information re income tax.
Arrange through Live Stock Branch for second bonus on rams.
Request for information on Dorset Sheep.
Information re mildew on rose bushes.
Information on treatment of grain for smuts.
Information re fertilizers.
Order Legume Culture for alfalfa.
Request for housekeeper.
Insects to identify.
Information on spraying.
Information re sewage disposal.
Diagnose a disease in a poultry flock.
Poison Bait for grasshoppers.
Caterpillars to identify.
Information on tobacco culture.
Information re prospective soldier settler.
Information re Rural Credits.

School Fairs.

School fairs have had a wonderful development during the past few years. Their popularity does not seem to be waning in the least and it is a particularly encouraging sign to see the deep interest which is developing from year to year amongst the local people.

The growth of the school fair movement in the province of Ontario can best be gleaned from the following figures given in approximately seven-year periods:

	1909	1915	1921
Number of School Fairs held	1	234	449
Number of Schools included	3	2,291	3,847
Number of Children taking part	58	48,386	95,307
Number of home plots	58	51,243	11,4216
Number of entries made at the Fairs	174	116,236	193,545
Number of Children attending Fairs	80	72,860	154,831
Number of Adults attending Fairs	170	84,406	188,728
Total Attendance at Fairs	250	157,266	343,259

This is truly a phenomenal growth, and it is a desire of the department to extend from time to time this form of education to all the rural schools in the province in order that all school children may enjoy its benefits.

During the past season, the Ontario Department of Agriculture, through the Agricultural Representatives, distributed to the boys and girls enrolled in the school fair movement, the following quantities of seeds and eggs:

Potatoes	1,039	bags.
Oats, barley and wheat	252	bushels.
Peas and corn (sweet and field)	24,100	packages.
Beets, carrots, onions and parsnips	42,000	"
Mangels and turnips	12,800	"
Asters, phlox, sweet peas and cosmos	30,750	"
Eggs, bred-to-lay Barred Plymouth Rock	10,852	dozen.

Each school fair is carried on by a board of directors composed of representatives from each school, the Agricultural Representative acting as manager. In most

cases, the Representative is assisted by a local committee representing the teachers, trustees and parents and where we have an active committee all pulling together there is no weak link in the chain.

One of the greatest handicaps to better work is the annual change of teachers; but this is gradually being overcome because many teachers have had more or less experience with school fairs even before they graduate from the Normal Schools.

It is very gratifying to report that the quality of the exhibits is improving from year to year. The pupils are gradually learning that it does not pay to bring anything but "good stuff" to the fair. The judges are requested to point out by comparison the difference between the exhibits awarded first prize and those awarded second, third, fourth, fifth and sixth prizes. Besides giving reasons for their placings, the judges try to point out to the exhibitors and others the desirable type, what constitutes quality in the various classes called for on the prize list and offer hints or suggestions as to the preparation of exhibits. This is one of the greatest educational features of the school fair.

The season of 1921 was not favourable for growing many of the crops supplied to the school children for school fair purposes. Grain crops were in many cases a partial or complete failure due to the extremely hot, dry season, and as a result the exhibits of these products were in many cases not so numerous as in former years, both in number of exhibits and quality. At fairs where the entries in grain and roots were reduced by crop failures, the exhibits in other departments were more numerous, indicating the popularity of the school fair and the desire of the pupils to take part.

Reports from the Representatives would seem to indicate that the livestock classes were as a rule fairly well filled despite the difficulties encountered in taking stock any great distance to the fair.

Prize Lists. An effort has been made by practically all Representatives during the past year or two to standardize school fair prize lists for their respective counties. Adopting a uniform prize list classification for all the school fairs in one county very materially reduces the cost of printing as the only changes of type necessary are for the place and date on the cover page and the value of the prizes, list of officers and special prizes on the back page. This standardization of the prize lists also greatly facilitates the work of the staff in preparing the school fair books and in keeping records.

The following is a typical school fair prize list:

Grain and Corn.

Class.
1. Wheat—Marquis—1 quart.
2. Wheat—Marquis—Sheaf, 3 inches diameter.
3. Oats—O.A.C. No. 72—1 quart.
4. Oats—O.A.C. No. 72—Sheaf, 3 inches diameter.
5. Barley—O.A.C. No. 21—1 quart.
6. Barley—O.A.C. No. 21—Sheaf, 3 inches diameter.
7. Field Peas, Arthur—1 quart.
8. Garden Peas, Thomas Laxton—1 quart.
9. Dent Corn—Wisconsin No. 7 for Ensilage purposes—sheaf of 8 stalks with ears attached.
10. Flint Corn—Longfellow for husking purposes—6 ears.
11. Sweet Corn—Golden Bantam—6 ears.

Potatoes, Roots and Vegetables.

12. Potatoes—Green Mountains—12 tubers.
13. Potatoes—Irish Cobblers—12 tubers.
14. Mangels—Yellow Leviathan—3 roots.
15. Turnips—Purple Top Swede—5 roots.

16. Beets—Detroit Dark Red—6 specimens.
17. Carrots—Chantenay—6 specimens.
18. Parsnips—Hollow Crown—6 specimens.
19. Onions—Yellow Globe Danvers—6 specimens.

Flowers.

20. Sweets Peas, Spencers Hybrids—Table bouquet.
21. Asters, Giant Comet, mixed—Table bouquet.
22. Phlox, Drummondi—Table bouquet.

Live Stock.

All live stock must have been born on or after January 1st, 1921.
Colts and Calves must be halter broken and exhibited by pupil.

26. Colt—Draft.
27. Colt—Roadster or Carriage.
28. Calf—Beef.
29. Calf—Dairy Heifer.
30. Lamb—ewe or wether—Long wool.
31. Lamb—ewe or wether—Short wool.
32. Bacon hogs—Pair.
33. Halter Broken Colt—Handling and training only considered.
34. Halter Broken Calf—Handling and training only considered.

Fruit.

35. Apples—Wealthy, 5 specimens.
36. Apples—McIntosh, 5 specimens.
37. Apples—Spy, 5 specimens.
38. Apples—Snow, 5 specimens.
39. Pears—Duchess, 5 specimens.
40. Plums—Reine Claude, 5 specimens.

Cooking.

41. Light Layer Cake, any icing. Girls 11 years and over.
42. Canned Tomatoes—1 quart. Girls 11 years and over.
43. Tea Biscuits—1/2 dozen—made from following recipe—1 cup flour, 1/4 teaspoon salt, 1/2 to 1 tablespoon shortening, 2 level teaspoons baking powder, about 1/3 cup sweet milk. Girls under 11 years.
44. Chocolate Fudge—1/2 pound. Girls under 11 years.
45. Maple Cream—1/2 pound. Open class for boys and girls.
46. School Lunch—suitable for boy or girl. Open class for boys and girls.

Sewing.

47. Needle-Case. Girls under 11 years.
48. Doll's Quilt—12 inches by 18 inches. Girls under 11 years.
49. Clothes-pin bag (Machine made). Girls 11 years and over.
50. Embroidered Centrepiece, with crocheted edge, 15 inches in diameter. Girls 11 years and over.
51. Tatting on edge of Handkerchief. Open class for girls.

Manual Training.

52. Handy Toolrack for farmer. Open class for boys.
53. Model of a Ladder—Not more than 3 feet long. Open class for boys.
54. Bird-house for Wren. Boys under 11 years.
55. Window Flower-box. Open class for boys and girls.

Nature Collections.

56. Collection of Native Woods—5 specimens, 4 inches by 2 inches by 1½ inches, each showing, a polished surface; and 5 specimens of same woods, showing bark and unpolished surface.
57. Noxious weeds, pressed, mounted and named, 20 or more specimens, one on each mount.
58. Economic Insects(injurious and beneficial)—mounted and named, 20 or more specimens.
59. Plant diseases affecting field and garden crops.
60. Weeds Seeds, named, 20 or more.

Essays.

61. NOTE: Essays, Writing and Drawing must be done in school under the supervision of the teacher, certified by the teacher as being the work of the pupil exhibiting, and forwarded to G. R. Green, Department of Agriculture, Woodstock, between June 1st and June 25th, 1921.

62. Essay—"Evolution of the British Navy"—not less than 20 lines and not more than 30 Fifth class and 1st Form in Continuation Schools.
63. Essay—"The Value of Insectivorous Birds to Man"—not less than 20 lines and not more than 30. Fourth Class.
64. Essay—"A School Fair"—not less than 20 lines and not more than 30. Third Class.
65. Essay—"My Favourite Pet"—not less than 15 lines and not more than 25. Second Class.

Writing.

66. Writing—First two stanzas of "The Spires of Oxford" (New High School Reader). Fifth Class and 1st Form in Continuation Schools.
67. Writing—First three stanzas of "Canada." Fourth Class.
68. Writing—First three stanzas of "England's Dead." Third Class.
69. Writing—Poem "Indian Summer." Second Class.
70. Writing—"Morning Hymn" in pencil. First class.
71. Writing—"My Garden" in pencil, one verse. Primer Class.

Drawing.

72. Illustration in Water Colors, of the first stanza of "Untrodden Ways." Fifth Class and 1st Form in Continuation Schools.
73. Poster for School Fair. Fourth Class.
74. Group, in pencil, of a pitcher, a tumbler half filled with water and half a lemon, (shaded). Third Class.
75. Crayon Drawing of a Carrot. Second Class.
76. Crayon illustration of "Jack and Jill" in mass. First Class.
77. Drawing of a Teddy Bear, in mass. Primer Class.

Miscellaneous.

78. Plan of ideal farm of 100 acres, showing crops and position of buildings, on cardboard size 10 inches by 12 inches.
79. "Natural Products Map" of Ontario, on cardboard, size 20 inches by 28 inches. Natural Products to be shown by pictures or otherwise. This class is to be an exhibit from the School.

Contests.

80. Stock Judging Competition, open to teams of three boys from each school. Teams will be given two classes to judge—one of Dairy Cattle and one of Bacon Hogs, and will be asked to place the stock, 1st, 2nd, and 3rd, and write reasons for so doing. Boys winning 1st and 2nd prizes in previous years will be allowed to compete, provided they were still attending school at Summer Holidays, and must represent the school they attended at that time.
81. Girls' Relay Hemming Competition, open to teams of three girls from each School. The team from each school will bring to the Fair one spool of white cotton thread number 40, 3 needles and 3 thimbles. Each team will be supplied with a strip of cotton ready for hemming. Thirty minutes will be allowed for the contest, to be divided into 10 minute periods, each girl in the team will sew 10 minutes. The hemming will be judged according to the quality and amount done.
82. Public Speaking Contest, limited to two pupils from each school, either boys or girls. Not more than five minutes allowed for each speech, and pupils will choose their own subjects.
83. Demonstration of points to be considered in judging bacon hogs. Boys will have a live hog or an illustration before them for reference.
84. Poultry judging competition for boys and girls. If it can be arranged, there will be four birds in this class, which will be judged from the standard of egg production.
85. Parade of all the schools once around the grounds, in order of number of School Sections, Number 1 leading. Each school to be led by Director carrying school flag. The prizes will be awarded on the following basis: 1. Marching; 2. Arrangement of Pupils. All vehicles, horses, and special costumes to be excluded.
86. Stratheona Drill, the whole school to take part. The following exercises to be used—1. Head bending backward and forward (hips firm); 2. Arm stretching sideways, upward and downward (arms bend); 3. Trunk bending sideways (hips bend); 4. Heel raising (feet astride, hips firm); 5. Mark time (hips firm); 6. Mark Time. Directions in drill will be given by a man appointed for that purpose.
87. For the boy or girl winning the greatest number of points in each School Section, a Certificate of Honor is being donated by the Ontario Department of Agriculture.

District Fairs.

District Championship School Fairs were held during the past season in the following counties:—Frontenac, Halton, Norfolk, Oxford, Welland and Wentworth and Rainy River and Manitoulin Districts. The first, second and third

prize exhibits from the various school fairs in the county or district were eligible for competition, the Agricultural Society supplying practically all the prize money.

Championship fairs are feasible only where it is possible to conduct the school fairs sufficiently early early in the season to allow prize exhibits to compete at the place where the championship fair is held and where transportation facilities are not too great an obstacle. Boys and girls take a great pride in winning a championship ribbon, and the quality of the exhibits is reflected in the local school fair. The championship goal seems to be an added stimulus. The exhibits staged at these championship fairs were not only a credit to the pupils, but also to the district from which they came. The pupils are "broadening out" and they are gaining a wonderful experience which will ultimately have its effect upon the larger fairs in the future.

During the past two or three years, there was an agitation on the part of the officers of some agricultural societies to have the school fairs linked up with fairs held under the auspices of the agricultural societies. Those favouring the holding of joint fairs put forth the argument that there would be less duplication of work and effort and the combined fair would be more successful. This scheme has had a fair trial. The greatest objection to holding joint fairs is the fact that in the great majority of cases there are too many counter-attractions, and difficulty is found in carrying out the well-arranged programme for the entertainment and especially the education of the children. With this plan, the school fair would more or less lose its identity and defeat some of the objects for which it was originally formed, namely, to give inspiration and create greater interest, broadly speaking, in agriculture.

The department feels that school fairs should be held separately and distinct from county or township fairs. In some communities, however, the local people feel that the two can be combined quite nicely and in order to guard against the objections raised the department insists that where the fall fairs, held under the auspices of the agricultural societies, and school fairs are conducted jointly, an agreement must be drawn up setting forth conditions which are agreeable to both the directorate of the agricultural society and the Agricultural Representative in charge of school fair work for the county.

New Features. School fairs are helped by something new and worth while each year. The pupils demand changes in order to keep up interest. Sports are merely an added attraction. This year many Representatives conducted some competition that was entirely new to the children, such as: judging competition for teams of three boys in live stock and for three girls in sewing and darning: individual competitions in naming weeds, apples, vegetables and live stock, the latter from pictures: table setting; chicken plucking; boys' riding; girls' hitching and driving; public speaking and singing competitions and Strathcona drill and school fair parade.

Boy and Girl Orators.

The public speaking competition is always one of the interesting features on the programme and many addresses are given which would do credit to people of more mature years. The following address was given by Miss Wilma Wittet at North Walsingham School Fair in Norfolk County last fall, and is fairly typical of those given in other counties:

"Mr. Chairman, Ladies and Gentlemen: I am more than pleased to see so many present and the keen interest in our first School Fair.

I would like to speak this afternoon on some of the advantages of holding a School Fair.

I am sure you will agree with me that it *is* an advantage. Some people claim School Fairs to be a disadvantage because of the time and interest taken from the regular school routine. But is it not time well spent? What calling in life will a great percentage of the pupils now attending rural schools follow when they grow up to be men and women? Why, farmers and farmers' wives. Do you expect them to continue in the same old rut as their ancestors? If not, they must be given an opportunity to gain wider experiences, for they cannot profit by that of which they have no knowledge.

In order to be a stenographer, one must attend Business College; to be a teacher one must have a Collegiate and a Normal School training at least; to be a doctor, lawyer or dentist a person must attend University. Now to be a successful and up-to-date farmer one must also be trained and be acquainted with the improved methods of farming.

You may ask what has this to do with School Fairs? Just this. School Fairs develop an interest in Agriculture and you are all well enough acquainted with child life to know that where a child's interest lies, there also is a great deal of his energy spent in gaining a wider knowledge of the subject. We can all exhibit produce, the seed of which has been supplied by the Ontario Department of Agriculture. These seeds are given free of charge. I think the idea of the government in granting these seeds and giving other financial aid is to enable the farmers of the future to select good seed and to instill in their minds the value of doing this. Children are anxious to have first-class produce to exhibit and in order to have this they must study improved methods of fertilization and cultivation, and these they can apply when they are called upon to farm on a larger scale.

Prizes are given on collections of weeds, native woods, seeds and other products of nature. When pupils are collecting these they find out their names, their location, their appearance, etc., and this is not only educative but it gives them a fuller knowledge of natural objects and a broader knowledge means more real pleasure in the many beautiful scenes in nature which God created for our enjoyment.

There are also prizes for cooking and sewing and the girls who exhibit these have no doubt been experimenting for some time. As they do this year by year they get valuable experience that may in the future be not only convenient for them but very fortunate for some man as men usually relish good palatable food.

Let me speak of the school parade. This no doubt takes hours of preparation and practice but is it not well worth while when we consider to what a great extent it fosters a school spirit? It supplies motive for which both teachers and pupils work co-operatively and this co-operation is carried into all school work and thus a great deal more can be accomplished and if, perchance, the School Fair should give girls and boys such an interest in the farm that in future years they will not be so keen to leave it to seek their fortunes in cities, I am sure the School Fair would have completed its work and have proved very advantageous.

I thank you all for your kind attention and hope you will all gather with us next year."

Home Garden Contests.

The Home Garden Contest is primarily intended for the teen age boys and girls on the farm. Sufficient seed is given to plant a plot 30 feet by 40 feet according to a plan which is sent to each contestant. An optional plan is given to allow for horse cultivation; the vegetables being planted in ten rows, thirty inches apart and 75 feet in length. The crops grown are as follows: tomatoes, corn, cabbage, peas, beans, onions, radish, lettuce, parsnips, beets, carrots, swiss chard, cucumbers, squash, citron and spinach. A special pamphlet, showing the crop arrangement, plan of garden, giving cultural instructions and suggestions is handed each contestant.

Each contest comprises 25 gardens. During the past season the competitors paid the cost price of the seeds, namely, 75 cents, and all told there were seventy-five Home Garden Contests, including 1,875 pupils.

During the months of July and August, the Agricultural Representatives inspected the gardens and awarded prizes for the best gardens. In addition, special prizes were offered at the school fair and local fall fair for exhibits of vegetables from the home garden. Last year competitors were required to can representative products from their gardens and exhibit these at the fair along with the fresh vegetables. This year it is planned to make canning optional.

The object of these home gardens is to interest boys and girls in better agriculture and encourage the use of more vegetables in the farm home.

It is truly surprising what can be grown in a small garden and, after allowing the family free use of the vegetables grown, many of the boys managed to dispose of the surplus products and make a little "pin money." They were thus able to thoroughly enjoy spending a little money earned by the exercise of their own skill. These early lessons in finance should stand them in good stead.

The Agricultural Representative in Middlesex County arranged with a local fair board to have garden products shown at the fall fair and in this connection reports as follows:

"We arranged this spring with the Fair Board at Strathroy, in which district the contest was held, to have the products shown at the fall fair. They agreed to pay for the seeds, and gave prizes amounting to $100 for competitions in connection with the contest. Prizes were given for exhibits of products from the gardens, for canned products, and for a canning contest on fair day. The showing made at the fair was very good, the exhibits taking up more than one half of one side of the agricultural hall. The four pupils who came first in the "Care of Gardens" also came first in the "Exhibits of products." The interest taken by the people of the sections interested in the contest was remarkable. Many visited the gardens during the growing season and at the fall fair much more interest was manifested in this section than in the regular exhibits."

Poultry Breeding Stations.

The Poultry Breeding Stations, which have been established in each county, under the direction of the Agricultural Representatives, continue to supply the eggs required for school fair purposes, which amounted to 10,852 dozens during 1921. In addition to the school fair requirements, the poultry breeding stations supplied considerably over 2,785 dozens to farmers for hatching purposes, thus increasing their output and tending to improve the quality of the farm flocks in the vicinity of the station. The poultry department of the Ontario Agricultural College supplied a limited number of settings to districts where breeding stations have not yet been established.

The eggs distributed for school fair purposes are from bred-to-lay barred Plymouth Rocks, and this is the only variety of fowl kept at the breeding stations. These flocks are rigidly culled every year by a representative of the poultry department of the Ontario Agricultural College, for the purpose of removing the non-producers and maintaining the highest standard possible of production and health.

Cockerels of a high producing bred-to-lay strain are supplied to the breeding stations each year for mating with the flocks from which the non-producers have been culled. This insures for the children taking part in school fair work, a supply of eggs for hatching from exceedingly high producing flocks, and cannot fail to increase the egg production and improve the standard of the poultry flocks throughout the province.

That there is a profit in keeping good poultry is proven from the following report taken from the records submitted by the Representative from Frontenac County:

Period—November 1st, 1920, to October 31st, 1921.		
Breed—Barred Rock, Bred-to-lay Strain.		
No. of Birds on hand, Nov. 1st, 1920—Yearling Hens	11	
Pullets	83	
		94
No. of Birds Oct. 31st, 1921—Yearling Hens	41	
Pullets	85	
		126

No. of Eggs set—630.
No. of chickens hatched, two hatches—395.
Per cent. Hatchability of Eggs—62.7.
No. of chickens raised to maturity—165.

Oil for Incubators—8 gallons at 30 cents	$2 40
Cost of Eggs—630 eggs at 7 cents	44 10
Total	$46 50

NOTE: Price charged for eggs was what would be received if sold to School Fair.
Cost per chick—$46.50 divided by 395 ..... 11.7 cents.

STATEMENT.

Expenditure.		*Receipts.*	
Feed	$343 80	Eggs, 986 dozen at 52½ cents	$517 65
Coal for Brooder	17 00	Hatching Eggs—	
Roosters	17 00	43 dozen at 85 cents	36 55
		28 dozen at $1.00	28 00
		Value Fowl Sold and Consumed	320 90
		Cockerels Sold	8 00
Total	$377 80	Total	$911 10
		Less expenditure	377 80
		Revenue	$533 30
		Value of Increase of stock over 1921 —32 at $2.00	64 00
		Total	$597 30

A number of birds were killed at different times during the summer, after they had been culled and condemned to die.

Average eggs per bird, 135.

This average was taken as if the whole flock was maintained to end of year.

Note—The heavy loss of chickens was due to several causes, the chief of which was a heavy thunderstorm soon after they were put on the runs. Cats and thieves were responsible for a number disappearing.

The owner and operator of the poultry breeding station from whom these figures have been obtained is Mrs. E. Lacey, Portsmouth. Last year, ninety pullets in her breeding station made a net profit of $180.57 which approximates $2 per bird.

The following table gives statistics regarding the poultry breeding stations for the year 1921:

County.	No. of P.B. Stations	No. of Hens and Pullets	No. of Cockerels	No. of dozen eggs for School Fairs	No. of dozen eggs Sold to Farmers
Algoma	6	295	17	265	50
Brant	4	232	14	181½	....
Bruce	3	315	14	266	29
Carleton	.....	.....	.....	90	.....
Dufferin	4	325	15	110	.....
Dundas	5	465	24	250	50
Durham	6	390	22	155	60
Elgin	6	519	25	364	198
Essex	3	260	17	500	135
Frontenac	4	313	16	156	40
Grenville	5	540	20	102	91
Glengarry	2	.....	.....	.....	.....
Grey	5	330	14	350	15
Haldimand	1	129	7	175	.....
Halton	3	450	15	.....	.....
Hastings	.....	.....	.....	.....	.....
Huron	2	850	8	364	.....
Kent	4	360	20	289	275
Kenora	3	235	7	89	40
Lambton	4	388	18	461	115
Lanark	3	155	9	137	.....
Lennox and Addington	3	223	15	241	109
Leeds	9	465	27	215½	63
Lincoln	2	130	6	130	15
Manitoulin	7	270	13	162	.....
Muskoka	.....	.....	.....	.....	.....
Middlesex	4	265	.....	189	209
Norfolk	5	372	20	424	115
Ontario	4	278	13	331½	.....
Oxford	4	416	25	455	251
Northumberland	5	.....	.....	227	15
Peel	3	232	16	281	130
Perth	.....	.....	.....	.....	.....
Peterboro'	2	160	10	123	79
Prescott	4	374	19	107	20
Prince Edward	2	.....	.....	116	.....
Rainy River	5	119	10	49	.....
Renfrew	5	174	11	115	40
Simcoe	4	295	15	447	.....
Sudbury	.....	.....	.....	.....	.....
Timiskaming	3	245	9	105	.....
Fort William	1	90	5	60	50
Port Arthur	5	177	12	125	359
Victoria	5	328	19	224	.....
Waterloo	4	290	16	281	50
Welland	4	414	14	360	.....
Wellington	2	.....	.....	.....	.....
Wentworth	4	217	18	322	200
York	4	140	8	209	.....
Total	173	12,225	583	9,594½	2,785

Courses in Agriculture.

During the months of January and February, the Agricultural Representatives conduct courses in practical agriculture lasting about four weeks. These courses are intended primarily for farmers' sons from 16-30 years of age and are held at a different point in the county each year. The classes are held from 9.00 to 4.00 o'clock each week day except Saturdays. Lectures are given by the Agricultural Representative and his assistant. Special lecturers are supplied to dis-

cuss such subjects as Veterinary Science, Beekeeping, Poultry, Farm Management, Fruit and Vegetable Growing, Marketing and Co-operation, Gas Engines and Farm Tractors and Poultry.

These Courses are apparently supplying a need, and are being appreciated more and more each year by the young farmers of the Province. Last year 40 Courses were held at which 1,138 farm boys were in attendance.

Visits to neighboring farms where the various classes of live stock are judged constitute one of the outstanding features of the lecture work. Literary and debating Societies are organized, and the members of the classes are given practice in debating and public speaking.

In counties close to Toronto, arrangements are made for an excursion party to visit the Stock Yards, Abattoirs, Dairy Plants, Implement Manufacturers and other points of interest.

The following subjects are taken up at these special Courses in Agriculture: Live Stock, Feeds and Feeding, Field Crops, Dairying, Poultry, Agricultural Botany, Insects and Fungus Diseases, Sprays and Spraying, Soils, Manures and Fertilizers, Fruit and Vegetable Growing, Bacteriology, Marketing and Co-operation, Farm Management and Farm Book-keeping.

Special Short Courses in Sheep and Swine Marketing.

Special three-day Courses in Sheep and Swine Marketing were held at seventeen points throughout Ontario during the winter of 1921 by the Sheep and Swine Division of the Live Stock Branch of the Dominion Department of Agriculture in co-operation with the Agricultural Representatives. These courses were conducted where possible in conjunction with the month's Courses in Agriculture. This policy of the Federal Sheep and Swine Division had for its object the stimulating of a greater interest in the sheep and swine industry throughout the Province by demonstrating in a practical way the most modern practices and methods in the care, management, slaughtering and marketing of sheep and swine. The demonstrators who were experienced practical men dealt in a very efficient manner with the many problems of the sheep and swine industry and particularly as it affects the farmer from the marketing standpoint. The handling, grading and marketing of wool, together with practical demonstrations in slaughtering of sheep and swine, and the cutting up of the carcasses were important features of these Courses.

The special Sheep and Swine Courses were so successful and beneficial that the Sheep and Swine Division of the Dominion Department of Agriculture was anxious to have the work continued and extended, and the great majority of Agricultural Representatives made application for such a course in conjunction with their 1922 month's Courses.

Other Special Courses.

In addition to the regular winter Courses in Agriculture, the Representatives from time to time conduct short courses of from one day to a week's duration, dealing with special phases of Agriculture of particular interest or value to their respective counties.

These special events include one or two-day live stock and seed judging courses; one-week stock judging courses for young men; fruit and vegetable courses; live stock grading demonstrations; mock auction sales and live stock field days during the summer months. Farmers and Junior Farmers interested in the special courses, appreciate this assistance and information with the result that they have been largely attended in almost every case.

Two-Day Stock Judging Courses.

Two-day Stock Judging Courses have been held in a number of Counties during the past year, for the purpose of giving all farmers, both old and young, some definite training in the judging of the various classes of live stock. Different classes of live stock depending upon the district are brought into a central point, where competent authorities and judges of the various classes conduct the judging demonstrations. Questions of feeding and management are also discussed at these Courses. Seed Judging is also often included as part of the programme.

Stock Judging Courses of one week's duration for young men, were held in a number of Counties. A special effort was made to have all the young men in the district attend these courses, which were of a very practical nature, and those attending were given a thorough training in the judging of all classes of live stock. The men attending these judging courses are usually junior farmers and in most cases follow up the training by competing in the County live stock judging competitions and judging competitions at the larger exhibitions such as Toronto, Ottawa and London.

Fruit and Vegetable Courses were held in districts where these crops predominate and consisted of a thorough and practical course by specialists and experienced men dealing with varieties, cultural methods, care and management, marketing, disease and pest control and other problems of the practical fruit and vegetable grower. *Live Stock Field Days* were conducted with the object of having the live stock men of the district get together for their material benefit and in addition to having an outing and social intercourse. A judging demonstration and general discussion on some class of live stock was included in the programme. These field days are becoming decidedly popular and the live stock men appreciate the opportunity of meeting with their fellow breeders, discussing their problems and becoming better acquainted.

Live Stock Grading Courses or Demonstrations were conducted at a number of places and at these, market classes of the various types of live stock were graded, as they would be upon arrival at a marketing point, by experienced men from the stock yards and packing plants. The farmers were given an opportunity to do the grading, which with the discussions led by the experienced graders, enabled them to form an intelligent idea of methods followed at the stock yards in grading live stock before it is finally disposed of and should accomplish considerable towards eliminating criticisms and misunderstandings between packer, drover and farmer.

Mock Auction Sales.

Mock Auction Sales have been held with the object of making the Junior Farmers more familiar with the actual cash value of live stock. By bidding on animals at a mock auction sale and then having the animals valued by a competent party, the young men receive a training in placing value on animals, which cannot be over-estimated.

In addition to the Short Courses, the Representatives often find it necessary to conduct special meetings to deal with some questions of particular importance to a certain district or group of people, or to bring before the people some important work. In this connection special meetings have been held to discuss such questions as fruit, vegetables, co-operation, egg circles, wool marketing, poultry

culling and numerous other topics. These meetings being called for a definite purpose, are usually not only well attended, but are attended by people who are interested in the subjects discussed and through such meetings much active work is started.

Junior Farmers' Improvement Associations.

The first Junior Farmers' Improvement Association in Ontario was organized in 1914. To-day there are 104 Associations with a membership of 2,815. These Associations are usually organized at the conclusion of the months Courses in Agriculture and the membership consists of the young men attending the classes. The Junior Farmers' Improvement Association has for its objects not only the promotion of better agriculture but improved educational and social conditions in the rural communities.

The Junior Farmers' Improvement Association hold regular meetings of both an educational and social nature during the winter months, and compete in the various profit competitions in field crops, milk production, hog feeding and baby beef rearing, conducted by the Department of Agriculture. They also conduct demonstrations and experiments; arrange educational exhibits; hold picnics; conduct auto tours; public speaking contests; live stock judging competitions; plowing and other competitions and take charge of various other events in their respective districts, such as athletic field days. These Associations are becoming very closely linked up with the life of their communities and have accomplished a great deal in improving agricultural, educational and social conditions.

In three counties, the local Junior Farmers' Improvement Associations have affiliated, forming a county organization. These county organizations take charge of work which affects the whole county, such as county championship judging competitions, championship debates and public speaking contests.

In one of the Counties, a number of boys who had attended the month's Course in Agriculture, and who had become members of the Junior Farmers' Improvement Association, arranged to visit local farmers' clubs during the months of February and March and gave summaries of some of the subjects discussed at the Course.

Referring to the activities of the County Junior Farmers' Improvement Association, the Representative in Durham County reports as follows:

"The Durham County Junior Farmers, an amalgamation of all the local branches, is doing good work. Each year a Stock Judging Competition is held, and during the past two years, the Competitions were managed entirely by the boys and were held at Bowmanville, November 15th, 1920, and Blackstock, October 21st, 1921.

In June, 1921, the County Organization arranged a Motor Trip for its members and others to the Niagara Peninsula. Thirty-eight persons made up the party which visited: Gordon Gooderham's Holstein herd at Clarkson; Paul Fisher's fruit farm, Burlington; H. M. Pettit's Shorthorn herd at Burlington; the Vineland Experiment Station; McSloy's Guernsey herd at Martindale Farm, St. Catharines; the Chippewa Canal; Larkin's Farm, Queenston; Niagara Falls; Turner's Ayrshires near Hamilton; the Binbrook Memorial Hall, Binbrook Township; several large apple orchards west of Hamilton and the Hamilton Market.

The party camped at Grimsby the first night, June 16th, then went on to Niagara Falls on the 17th, returning to Grimsby again to camp that night and returned home on the 18th. Thus the trip took up three days and in all 350 miles were covered from Bowmanville to Niagara Falls and return.

The trip was rather strenuous but everyone had a good time and considerable information of value was picked up by those who went. The cost of the trip for each man amounted to about $18.00, including transportation, meals and accommodation in camp. The scheme seems popular and it is probable that the Association will organize another trip for 1922."

Junior Farmers at the International.

As was the case in 1920, a special prize consisting of a trip to the International Live Stock Exposition, Chicago, with expenses paid, was offered as a Championship prize at the County Championship Live Stock Judging Competitions in several Counties. Six young men won free trips to Chicago in 1921 and attended the International Live Stock Exposition. Arrangements were made to have these young men travel in a body and while in Chicago they were the guests of Armours' Bureau of Agricultural Research and Economics. In addition to visiting the Live Stock show, these Junior Farmers had an opportunity of visiting the various meat packing plants, the Chicago Stock Yards and other places of interest in Chicago, such as the stock exchange, the financial district and the museum.

Junior Farmers' Plowing Competitions.

The Junior Farmers' Plowing Competitions continue to be popular and keenly contested. Last year, 15 competitions were conducted with 160 Junior Farmers competing. The value of these Plowing Competitions cannot be over estimated and the Agricultural Representatives report a very noticeable improvement in the quality of plowing where competitions have been conducted. As the plowing is done on the home farm, entries are secured from many young farmers who would not feel capable of taking part in a public plowing match, but who once having competed and won a prize, are often sufficiently encouraged to launch out into the keener public competitions. The Grenville Representative reports that the success of the Junior Farmers' Plowing Competition made it possible to organize a branch of the Ontario Plowmen's Association and to conduct a regular plowing match in that County.

The prizes for the Junior Farmers' Plowing Competitions are secured locally, while the judges are provided by the Department of Agriculture when requested. Where Competitions have been repeated in the same district, the judges report a very noticeable improvement from year to year and in this connection the Waterloo Representative reports as follows:—

"It was remarkable to note the difference between the plowing in the North and the South of the County. In Wellesley Township where there have been no Plowing Matches for many years, the plowing was very rough work, while in Dumfries Township where there has been a Plowing Match for years back, the plowing was extra good. In these Competitions, a boy in the two-furrow class won first in the whole competition. The rules as used in this County allow a boy to use any kind of plow and to plow any kind of land. The difference in this plowing seems to point out very clearly the value of the Plowing Match. Many people complain about Plowing Matches being of little value, but they only need to go into a district where these have not been held to see the difference in the work."

York County Junior Farmers organized a plowing competition last year in connection with one of the local plowing matches, which was very successful. The thirty contestants were required to judge two classes, one in stubble and one in sod, and to write reasons for their placings. Suitable prizes were offered and this competition created a great deal of interest amongst the old plowmen and provided a valuable training for the Junior Farmers.

Live Stock Judging Competitions.

The Inter-County Live Stock Judging Competitions are probably doing more to encourage young men to take an interest in good live stock and in training live stock judges, than any other line of work undertaken by the Agricultural Representatives. Judging teams from 21 Counties competed in the Judging Competition at the Guelph Winter Fair for the Manning W. Doherty Trophy and 12 Counties competed at the Ottawa Winter Fair for the Peter White Trophy. Two hundred and twenty-five dollars in individual cash prizes were offered at

each Winter Fair. Each County was represented by a team of three Junior Farmers, the Championship trophies going to the team standing highest in each Competition.

The Doherty Trophy offered at the Guelph Winter Fair was won by the team from York County, and constitutes the first win on a new trophy. The attached table shows the standing of the Judging teams in the different classes, also their total scores.

SUMMARY OF RESULTS OF INTER-COUNTY LIVE STOCK JUDGING COMPETITION, GUELPH, DECEMBER 3RD, 1921.

STANDING OF CONTESTING TEAMS

County.	Horses	Beef Cattle	Dairy Cattle	Sheep	Swine	Total	Standing
York	482	478	466	485	452	2,363	1st.
Wentworth	409	489	481	505	453	2,337	2nd.
Wellington	384	488	433	479	473	2,257	3rd.
Oxford	388	510	474	484	382	2,238	4th.
Peel	412	405	441	451	419	2,128	5th.
Waterloo	415	486	394	392	434	2,121	6th.
Lambton	387	467	437	369	448	2,108	7th.
Durham	312	466	461	425	406	2,070	8th.
Huron	431	440	422	407	368	2,068	9th.
South Simcoe	433	453	367	426	350	2,029	10th.
Bruce	328	483	461	416	340	2,028	11th.
Ontario	220	475	462	459	369	1,985	12th.
Victoria	331	465	428	358	395	1,975	13th.
Halton	242	462	429	446	291	1,870	14th.
Dufferin	274	371	434	349	344	1,772	15th.
Middlesex	280	378	321	376	393	1,748	16th.
Haldimand	255	415	302	395	373	1,740	17th.
North Simcoe	238	360	408	395	335	1,736	18th.
Elgin	299	395	394	321	317	1,726	19th.
Norfolk	263	357	384	353	330	1,687	20th.
Welland	244	312	416	372	340	1,684	21st.

The Peter White Trophy offered for competition at the Ottawa Winter Fair was won by the Judging Team from Grenville County. The following table gives details of the scores in this competition.

INTER-COUNTY JUDGING COMPETITION, OTTAWA WINTER FAIR, JANUARY 18TH AND 19TH, 1922.

COUNTY STANDING.

Possible Score—3,000.

County.	Horses	Beef	Dairy	Sheep	Swine	Total	Standing
Grenville	416	475	521	475	470	2,357	1st.
Peterborough	503	413	418	445	411	2,190	2nd.
Lennox and Addington	446	420	343	458	405	2,152	3rd.
Hastings	408	413	458	426	434	2,139	4th.
Lanark	434	368	410	434	464	2,110	5th.
Prince Edward	437	367	421	319	418	1,962	6th.
Dundas	373	397	369	369	414	1,913	7th.
Leeds	399	355	402	305	429	1,890	8th.
Frontenac	423	288	332	391	434	1,868	9th.
Glengarry	412	231	392	386	342	1,763	10th.
*Renfrew	312	328	323	375	347	1,685	11th.
Prescott and Russell	222	223	245	268	258	1,216	12th.

* Two men only judged.

Championship Judging Competition.

The Provincial Championship Judging Competition, between the team from York County, winners of the Doherty Trophy at Guelph Winter Fair, and the team from Grenville County, winners of the Peter White Trophy at the Ottawa Winter Fair, was conducted in Peel and Halton Counties on March 8th and 9th, 1922. The silver trophy, emblematic of the Provincial Championship, was donated by the Union Stock Yards Company and Toronto Meat Packers. The live stock breeders visited and the classes of stock judged are indicated below:—

Albert Hewson, Malton	Clydesdale Brood Mares and Geldings.
B. H. Bull and Sons, Brampton	Jersey Cows.
W. Tilt, Brampton	Oxford Ewes.
G. L. Smith, Meadowvale	Berkshire Brood Sows.
J. K. Featherstone, Streetsville	Yorkshire Bacon Hogs.
G. E. Gooderham, Clarkson	Holstein Cows.
H. W. Pettit, Freeman	Shorthorn Cows and Heifers.
E. R. Wood, Freeman, No. 2	Leicester Ewes.

The Stock Yards Company and Meat Packers in addition to donating the Championship trophy, which was won by York County, paid all expenses connected with the competition, banqueted the members of both teams, their coaches and representatives of the Department of Agriculture, at which the trophy was presented to the Judging Team from York County. The following is the score by classes of the two teams in the Championship Contest:—

	Horses	Beef	Dairy	Sheep	Swine	Total
York	442	465	471	382	480	2,240
Grenville	364	459	445	448	388	2,104

York County thus won by 136 points. The possible was 3,000.

The teams and trainers were as follows:—

York County—J. C. Steckley, Newmarket, Agricultural Representative	Grenville County—W. M. Croskery, Kemptville Agricultural Representative.
Team—Allan Balsdon, Markham.	Team—H. A. Ferguson, Spencerville.
Russell Boynton, Gormley.	Arthur Runions, Cardinal
Elton Armstrong, Armitage.	Floyd Barber, Merrickville.

Judging Competitions at Exhibitions.

The Junior Farmers' Judging Competitions at the Canadian National, Toronto, Central Canada, Ottawa, and Western Fair, London, were conducted again last year and are very popular with the young men of the Province, who competed in large numbers at all three Exhibitions. Classes in horses, beef cattle, dairy cattle, sheep and swine are judged at each exhibition and in addition, poultry, fruit and vegetables, grain and roots are judged at the Canadian National. These competitions are open to young men between fourteen and thirty years of age and each competitor is permitted to enter in two classes of live stock at London and Ottawa, while at the Canadian National they are permitted to enter in one class of live stock and one class of either poultry, fruit and vegetables or grain and roots. The judging is conducted on practically the same basis as the Inter-County Competitions at the Winter Fairs, 50 points being allowed for correct placing and 50 points for perfect reasons. Competitors give oral reasons on their placing cards, which are used only in cases where it is required to break a

tie. The cash prizes offered by the different exhibitions were as follows:—Canadian National, Toronto, $1,500; Central Canada, Ottawa, $495; Western Fair, London, $170. The number of young men competing in the judging competitions were as follows:—Toronto, 285; Ottawa, 107; London, 45.

The Directors of the different Exhibitions realize the value of these Judging Competitions in training Junior Farmers as live stock judges and have been anxious to assist not only financially but in encouraging entries and providing convenient facilities.

Profit Competitions Conducted by Junior Farmers.

The value of the various crop and live stock competitions conducted by the Junior Farmers under the supervision of the Agricultural Representatives is indicated by the increasing number of contestants from year to year and the interest shown by them in the keeping of detailed records. Two hundred and eighty-four young men entered the various competitions last year and the majority of them did very creditable work. Owing to the very unfavorable season, together with the slump in prices, all contestants were not able to show a profit.

Competitors who completed the competitions in all details received a valuable training in better farm methods and production costs, although they may not have won a prize or shown a profit on the undertaking.

All competitions were open to young men under 30 years of age who had not won a prize in a competition in previous years. The prize in each competition consisted of railway transportation, board and lodging while attending one of the Short Courses at the Ontario Agricultural College, Guelph or the special short courses in general agriculture at the Kempville Agricultural School, Kempville. Winners in the competitions in Western and Northern Ontario attended the short courses at the Ontario Agricultural College and the Eastern Ontario winners attended the short course at the Kemptville Agricultural School. In all thirty-seven competition winners were provided with transportation to Guelph and Kempville.

During 1921 competitions were conducted as follows:—

Acre Profit competitions with Oats (8).
Potatoes (7).
Corn (1).
Turnips (1).
Dairy Profit Competitions (3).
Baby Beef Competitions (4).
Feeding Hogs for Profit Competitions (13).
A total of 37 competitions.

Acre Profit Competitions:—Prizes in these competitions were awarded for the largest net profit per acre and unless six entered and four completed the contest, no prize was awarded. In cases where twelve entered and eight completed the work, two prizes were awarded. The contestants themselves decided on the crop for their competition. In the case of competitions with oats and barley, each contestant was required to have at least 5 acres of the crop: this enabled him to also enter in the standing field crop competition. For all other crops the area was one acre. Each contestant was required to keep on forms supplied, an accurate record of all labor, cost of seed, fertilizer and other expenses in connection with producing the crop.

In calculating the cost of production in the various competitions, the following values were used:—

Man labour to be reckoned at 30 cents per hour.
Horse labour to be reckoned at 15 cents per hour.
Barnyard manure applied to this crop at $1.00 per ton or two-horse load.
" " " previous crop at 50 cents per ton or two-horse load.
Commercial Fertilizer applied to this crop at one-half of cost price.
Rent of land eight per cent. of the selling value of the land, this to be figured by the Representative and the Junior Farmers' Improvement Associations.
Plowing—$4.00 per acre. (This is figured on the basis of hiring a man and a team at the rate of $6.00 per ten hour day).

ACRE PROFIT

	Value Seed Used in Planting		Value Product Harvested	
Turnips	$ .65	per lb.	$ .12½	per bushel.
Mangels	.50	"	.12½	"
Potatoes	1.00	per bushel.	1.00	"
Spring Wheat	2.00	"	1.20	"
Oats	1.00	"	.45	"
Barley	2.00	"	.65	"
Field Beans	3.00	"	2.75	"
Field Peas	3.00	"	1.50	"
Corn for Seed	2.25	"	.63	"
Corn for Silage	2.00	"	5.00	per ton

ACRE PROFIT COMPETITIONS 1921

County and Winner.	Yield in bushels	Value	Cost of production	Profit or Loss.
Oats, 45 cents per bushel				
LENNOX AND ADDINGTON:				
Cecil Luther—Napanee, R. R. 7...	61	$27 45	$26 02	$1 43 Profit.
PRESCOTT AND RUSSELL:				
Henri Dupont—Curran.....	40	18 00	19 05	1 05 Loss.
BRUCE:				
Lloyd Hopper—Paisley.....	34 3-5	15 57	16 73	1 16 Loss.
ONTARIO:				
Harold E. King, Cannington, R.R. 2.	43.5	19 57	21 58	2 01 Loss.
MIDDLESEX:				
L. A. Baker—Lambeth R.R. No. 1	45.15	20 32	24 08	3 76 Loss.
KENORA:				
Melville R. Fisher—Dryden.....	20	9 00	13 19	4 19 Loss.
LINCOLN:				
J. C. Thompson—Beamsville R.R. 2.....	32	14 40	19 69	5 29 Loss.
LAMBTON:				
H. C. Nesbitt—Mooretown, R.R. 1	28.5	12 85	18 30	5 45 Loss.
Potatoes, $1.00 per bushel.				
THUNDER BAY—PORT ARTHUR:				
Conwell Pifer—Kakabeka Falls...	528	528 00	50 35	477 65 Profit.
TIMISKAMING:				
Bruce Irvine—Hanbury.....	506 2-3	506 66	83 37	423 29 Profit.
Chas. H. Thomas—New Liskeard, R.R. No. 1.....	617	617 00	80 20	536 80 Profit.
MANITOULIN:				
Llewellyn Honess—Poplar.....	258	258 00	79 96	178 04 Profit.
SIMCOE:				
Ernest Switzer—New Lowell.....	219	219 00	50 80	168 20 Profit.
BRUCE:				
W. A. Leeder—Port Elgin.....	170	170 00	46 80	123 20 Profit.
NORFOLK:				
Aubrey Adams—Wilsonville.....	131	131 00	73 60	57 40 Profit.
Corn, 63 cents per bushel.				
ESSEX:				
R. M. Elliott—Comber.....	53	33 39	29 05	4 34 Profit.
Turnips, 12½ cents per bushel.				
ALGOMA:				
Chester E. Farmer—S.S. Marie R.R. No. 2.....	1230	153 75	79 43	74 32 Profit.

In computing profit, no allowance was made for "overhead" expenses such as Interest or Investment, charge for machinery nor for depreciation in value of any kind.

DAIRY PROFIT COMPETITIONS.

Prizes were awarded for the largest net profit for a cow or heifer which had not been previously entered in a Record of Performance or other similar yearly test. The Dairy Profit Competition extended over a period of seven months. Contestants were required to weigh each milking and to take a two ounce sample three times a month. Those samples were tested and the amount of butter fat determined each month by the Agricultural Representative. Accurate records

were also required as in the case of the other competitions and the profit was determined by deducting the cost of feed from the value of the butter fat and skim milk.

In compiling results, butter fat was valued at 62 cents per pound for March, 58¾ cents for April, 28½ cents for May, 27½ cents for June, 35 cents for July, 40 cents for August, 39 cents for September, 40 cents for October and 43 cents for November. Skim milk 30 cents per cwt.

Pasture and feed were valued as follows:—

FOR FEEDING HOGS, BABY BEEF AND DAIRY PROFIT

Pasture	$1 00	per month	
Ground Oats	35 00	ton	
" Barley	45 00	"	
" Peas	55 00	"	
" Rye			
" Wheat	61 50	"	
" Corn	40 00	"	
Corn on cob	34 00	"	
Bran	30 00	"	
Shorts or Middlings	32 00	"	
Oil Cake	54 00	"	
Cotton Seed Meal	56 00	"	
Gluten Feed	50 00	"	

Low grade flour or red dog	$53 50	per ton
Tankage	62 50	"
Hay	20 00	"
Alfalfa	23 00	"
Straw	10 00	"
Silage	5 00	"
Roots	5 00	"
New Milk	35 00	"
Skim Milk	6 00	"
Buttermilk	4 75	"
Whey	3 00	"
Green feed (name kind)	2 00	"

DAIRY PROFIT COMPETITION 1921

County and Winner.	Value of feed	Milk	Fat	Fat	Value	Skim Milk	Value of Skim Milk	Net Profit
	$ c.	lbs.	%	lbs.	$ c.	lbs.	$ c.	$ c.
Prescott and Russell— Hector Carron, Curran.	13 76	6,594	4.12	263.55	93 12	6,330.45	19 00	98 36
Grenville— C. Floyd Barber, Merrickville.	27 07	6,908	3.3	228.6	87 46	6,679.4	20 03	80 42
Dundas (W. Stormont). Geo. B. Baker, Newington.	49 21	5,439	4.26	221.95	86 87	5,217	15 63½	53 29½

In this competition no charge is made for labor, interest on investment or other "overhead" expenses. The profit shown is the value of the butter fat and skim milk above the cost of feed and pasture.

Baby Beef Competition.

Prizes in the Baby Beef Competition were awarded on the basis of 75 points for quality and finish and 25 points for net profit. Contestants were permitted to enter either pure bred or grade heifers or steers, to start with several calves and discard the less promising ones as they developed. Calves entered were born after September 1st, 1920, and the competition concluded in November, 1921.

Special prizes were offered at the Ontario Provincial Winter Fair, Guelph, for animals entered in this competition. This feature created considerable interest and some very excellent animals have been shown in this class at the Winter Fair.

In calculating the net profit, the animals were valued at 9 cents per pound, the average price during the marketing season. Feed for this competition was valued as follows:—Pasture 75 cents per month, Nurse cow $6.00 per month. Grain, hay etc., as for Dairy Profit Competition. The cost of production included only the cost of feed, pasture, nurse cow, and the initial cost of the calf at $5.00. These points should be taken into consideration when making use of these results.

BABY BEEF COMPETITION, 1921

County, Winner and Breed	Date of Birth	Cost of feed consumed — initial value of calf ($5.00)	Weight of steer	Value	Net profit	Score.
		$ c.	lbs.	$ c.	$ c.	
Bruce— Harold Cormack, Paisley, R.R. 1. Shorthorn Grade.	Dec. 15, 1920	$72 99	1,020	$96 90	$23 91	93¼
Bruce— J. Fraser Scott, Port Elgin, R.R. 1 Shorthorn Grade.	Oct. 20, 1920	61 74	750	71 25	9 51	81.3
Wellington— John H. Saunders, Arthur.	Sept. 8, 1920	60 97	857	81 40	20 44	75¼
Huron— Harold Hunter, Exeter, R.R. No.1 Aberdeen Angus	Jan. 6, 1921	114 31	810	76 95	37 36 Loss.	64.9

FEEDING HOGS FOR PROFIT COMPETITION.

Each contestant was required to feed a pen of not less than four bacon hogs and to keep accurate records of the feed consumed from which the net profit per cwt. of gain was computed. The awards were made on the basis of 60 points for highest net profit per cwt. of grain, 20 points for the best kept records and 20 points for highest gain in weight except that for light and heavy hogs, two points were deducted for every 5 pounds over 230 pounds or under 180 pounds. The feeding period commenced when hogs were 6 weeks of age and continued until they were finished for market and not more than 28 weeks of age. A certificate was required of the weight of the hogs at time of marketing. In arriving at the net profit per cwt. of grain from 6 weeks of age, live hogs were valued at 11 cents per pound, the average top market price for 6 weeks beginning September 1st.

Feeds were valued as follows:—Pasture $1.00 per hog: other feeds as for Dairy Profit Competition.

County and Winner	Length of feeding period	Average cost of feed per hog.	Average weight of hogs alive when mark'd.	Average gain in weight from six weeks of age.	Value per hog of gain in weight.	Average net profit per hog.	Average net profit per cwt. gain.
			lbs.	lbs.			
Manitoulin—							
Willie Tustian,	June 8–						
R.R. No. 1 Kagawong.	Oct. 26	$ 6 75	196	169¼	$18 61¾	$11 85	$7 00
	140 days						
Bruce—							
C. Wilfred Grant,	June 16–						
Paisley.	Oct. 17	7 89¾	220	193¾	21 09	13 19½	6 88
	124 days						
Dundas—							
Mortimer Eastman,	Mar. 30–						
Lunenburg.	Aug. 15	7 06¼	195	171	18 81	11 75	6 87
	138 days						
Durham—							
John S. Cryderman,	Feb. 21–						
R.R. No. 4, Bowmanville.	July 27	7 19	221.5	171.5	18 89	11 70	6 81
	156 days						
Lambton—							
Chas. L. Hinks,	June 15–						
R.R. No. 1 Mooretown.	Sept. 20	8 08	192.5	163	17 88	9 80	6 03
	97 days						
Ontario—							
Walter Kirk,	April 23–						
R.R. No. 1 Brooklin	Nov. 5	10 33	212½	187½	20 62	10 29	5 49
	196 days						
Huron—							
C. A. Corbett,	April 29–						
R.R. No. 1 Fordwich.	Oct. 3	9 16	200	165	18 15	8 99	5 42
	157 days						
Lennox and Addington—							
Karl S. Denyes,	April 6–						
R.R. No. 1 Odessa.	Sept. 10	10 53¼	206¼	186¼	20 48¾	9 95	5 34
	157 days						
Simcoe South—							
Cecil A. Newton,	June 5–						
R.R. No. 1 Egbert.	Nov. 2	11 27	213⅓	191⅓	21 05	9 77	5 11
	150 days						
Sudbury—							
Isaac Muncaster,	May 11–						
Walford.	Oct. 15	10 88	212½	183¼	20 15	9 27	5 06
	157 days						
Rainy River—							
Wesley Harron,	May 14–						
Emo.	Nov. 12	12 53	232¼	214¾	23 62	11 09	5 00
	182 days						
Grenville—							
John H. Multon,	May 20–						
R.R. No. 4 Merrickville.	Oct. 20	13 82¾	225	202½	22 27½	8 45	4 17
	153 days						
Waterloo—							
Lorne Roth,	July 6–						
R.R. No. 2 New Hamburg.	Nov. 18	13 02½	178⅓	152⅔	16 78½	3 75	2 46
	135 days						

It should be noted that the cost of production in connection with the feeding of hogs for profit competitions does not include labor or other overhead expenses and this should be given due consideration when using these results.

The average cost of feed per hog was $9.89 for the 52 hogs fed by the competitors, the average net profit per hog $9.98, the average net profit per cwt. of grain from 6 weeks of age $5.51; the average number of days in feeding period 149 and the average gain in weight from 6 weeks of age 181 lbs. or an average gain of 1⅕ pounds per day throughout the feeding period.

BOYS' AND GIRLS' CLUB WORK.

The growth of the Boys' and Girls' Club Work is very gratifying and although the development is by no means phenomenal, the steady growth and sound organization is ample assurance of its value and permanency. The importance of Boys' and Girls' Live Stock Clubs in the development of the live stock industry in Ontario is recognized and appreciated by the live stock breeders of the Province, with the result that they are anxious to assist and co-operate in their organization and management.

In the formation of Live Stock Clubs, it is essential that only pure bred registered animals of good type and conformation be purchased for the members. The purchasing of animals for Clubs is usually financed by special arrangement with the local bank, by which the Manager agrees to accept notes from the members which have been satisfactorily endorsed. The rules and regulations governing Live Stock Clubs and details of methods of financing have been dealt with in previous reports and repetition here is unnecessary.

The following is a list of the Boys' and Girls' Clubs organized during the past year:—

BOYS' AND GIRLS' CLUB WORK.

County.	Name of Club.	Date of Organization	Membership	Age of Members	Breed of Live Stock.	Average age of Live Stock	Cost.	Date of Distribution
PIG CLUBS—							$	
Dundas	Merchants Bank Pig Club.	Oct., 1921	50	Aver. 14	Good bacon type obtained at home			
Halton	Esquesing Twp. Pig Club.		23		5 Berkshires 2 Tamworths 16 Yorkshires	About six weeks.		April 9.
CALF CLUBS—								
Durham	West Durham Agricultural Society Pure Bred Calf Club	Feb., 1921	14	11–17	Shorthorns 3 Holsteins.	1 year.	$100–$175	April 2.
Halton	Esquesing Twp. Calf Club.		19		Holstein.	2 years.		April 19.
Huron	Exeter District Calf Club.		2			16–24 months.	$200–$300	
Kent	Tilbury Calf Club	June, 1921	20		Shorthorn.	6–12 "	$67 00	
Lennox and Addington	L. & A. Pure Bred Calf Club	Mar., 1921	1	19	Shorthorn.	3 "	$35 00	April 19.
Oxford	East Oxford Heifer Club	Feb., 1921	23	10–19	Holstein. 1 Hereford	2–2½ years.	$175–$250	March, 1921
Prince Edward	Prince Edward County Pure Bred Registered Calf Club	June, 1921	43	12–20	21 Holsteins. 2 Jerseys.		Av. $125	June
	Ameliasburg Branch of P.E. County Pure Bred Registered Calf Club				20 Holsteins.			

LIVE STOCK CLUBS—ORGANIZED 1921

County	Name of Club	Date of Organization	Membership	Age of Members	Breed of Live Stock	Average Age of Live Stock	Cost	Date of Distribution
LIVE STOCK CLUBS—								
Brant	Brant County Boys' and Girls' Pure Bred Live Stock Club	1921	3	12–15	Holstein.	2½ years.	$225 00	
					Yorkshire.	6 weeks.	10 00	
					Berkshire.	3 months.	30 00	
Elgin	Boys' and Girls' Pure Bred Live Stock Club	April, 1921	31		2 Holstein.	Heifers.		
					7 "	Calves.		
					2 Shorthorns.	Heifers.		
					2 "	Calves.		
					2 Jersey.	Heifers.		
					1 Hereford.	Cow.		
					1 Angus.	Cow.		
					2 Yorkshires.	8 weeks.		
					1 Berkshire.	8 weeks.		
					10 Chester Whites.	8 weeks.		
Middlesex	London District Live Stock Club	April, 1921	12		7 Holsteins.	6 months.	$50–$70	May 30.
					3 "	18 months.	$160–$300	
					1 Shorthorn.	18 "	$160 00	
					1 Yorkshire.	7 "	$60 00	

Including those Clubs organized during the past year, we now have 17 Pig Clubs, 15 Calf Clubs, 4 Sheep Clubs and 6 Live Stock Clubs. These Clubs have a total membership of 814.

The St. Thomas District Boys' and Girls' Pure Bred Live Stock Club, organized in co-operation with the Manager of the Merchants' Bank at St. Thomas, held a Club Fair at St. Thomas on Sept. 17th, 1921. The prize money was donated by the bank and private individuals and very liberal prizes were offered in the various classes. Practically all of the club members exhibited animals at this Fair and the excellent condition in which they were shown was a credit to the members. The boys and girls were so encouraged with their success at the Club and School Fairs, that they decided to exhibit as a Club at the Aylmer Agricultural Fair, where they won the majority of first prizes in the classes in which they exhibited.

Pig Clubs.

During the spring of 1921, a number of Pig Clubs were organized by the Agricultural Representatives under the Boys' and Girls' Pig Club policy of the Federal Department of Agriculture. The objects of these Pig Clubs were to stimulate a greater interest in swine raising amongst the boys and girls, to develop a more general knowledge of swine marketing methods and to provide such other information and training as the actual feeding and management of live stock provides. Club members were required to own and feed for at least three months not less than two nor more than five hogs. Provision was made to have each Club Member exhibit a pair of hogs at a Township, School or Club Fair, for competition between individual Club Members, and to contribute up to five to the carload entry from the Club for competition between Clubs at a regular market point. The Dominion Live Stock Branch provided one-third of the prize money for the local Club competitions and all prize money for the car-lot entries. Liberal prizes were also offered by the Dominion Live Stock Branch for a Swine Judging Competition at the Stock Yards, at the time the car-lot entries from the Clubs were marketed.

POTATO DEMONSTRATIONS.

For the past four years, demonstration plots of potatoes have been grown in the Counties of Kent, Middlesex, Haldimand, Welland, Peel, Ontario, Bruce, Simcoe, Hastings, Carleton, Renfrew and Glengarry, with the object of determining the relative value of Northern Grown, Old Ontario Selected, Old Ontario Common and Maritime Province potatoes for seed purpose in old Ontario, and to determine the best source from which to obtain seed free from such diseases as "Mosaic" and "Leaf Roll," these so-called physiological diseases which result in a marked reduction in yield per acre compared with disease-free seed.

The Agricultural Representatives co-operating with the growers in their Counties looked after the planting, spraying and cultivation of these plots, and during the growing season the plots were visited and inspected for disease by the staff of the Department of Botany, Ontario Agricultural College, Guelph. When the potatoes were harvested, accurate yields were obtained from each plot by the Agricultural Representative.

TABLE 1.—IRISH COBBLERS

County	Northern Ontario Percentage				Old Ontario Selected Percentage				Old Ontario Common Percentage				Maritime Percentage			
	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre
				bush.				bush.				bush.				bush.
Bruce	2.5	.5	.5	113.0	5.5	1	.....	118.2	1	2.5	.5	103.8	4	1	2	89.2
Carleton	3.5	.....	.....	230.0	7	3	.....	203	14	5	.....	195.0	.5	.....	.....	206.0
Glengarry	.....	.....	.....	176.0	7	5	.....	198.0	11	5	.....	220.0	.....	.....	.....	176.0
Haldimand	.....	.....	.....	83.9	7	2	.....	76.5	11.5	5	.....	75.7	.....	.....	.....	92.0
Hastings	2	.....	.....	184.0	7.5	4	.....	160.0	11	7	.....	120.0	1	.....	.....	164.0
Kent	.....	.....	.5	128.1	6.5	4	.....	77.8	4.5	9.5	.....	91.2	.....	.....	.....	123.0
Middlesex	1.5	.....	.....	88.0	5.5	2	.....	80.0	11	5.5	.....	50.0	.....	.....	.....	96.0
Ontario	.1	.....	.....	268.6	9	5	.....	246.1	10.5	5.5	.....	207.4	.5	.....	.....	248.6
Peel	5	2	.....	254.9	5	1	.....	240.6	11.5	2	.....	226.8	4	1.5	.....	239.2
Renfrew	.....	.....	.....	90.0	12.5	3.5	.....	81.0	.....	.....	.....	82.0	.....	.....	.....	108.0
Simcoe	.....	.....	.....	181.8	4.5	2.5	.....	198.4	8.5	6.5	.....	176.0	3	.....	.....	204.8
Welland	.5	.5	.....	67.5	.5	.....	.....	75.0	4.5	.....	.....	67.5	.....	.....	.....	36.0

TABLE 2.—GREEN MOUNTAINS

				bush.				bush.				bush.				bush.
Bruce	.....	1	.5	97.8	1	6	.....	122.5	.....	6.5	.....	127.4	.....	2	.....	116.8
Carleton	4	1.5	.....	183.0	6	3	.....	207.0	10.5	6	.....	201.0	4	1	.....	186.0
Glengarry	1	2	.....	418.0	8	3.5	.....	308.0	10	5.5	.....	396.0	.....	.....	.....	286.0
Haldimand	.....	.....	1	64.1	6.5	4.5	.....	108.4	6.5	3.5	.....	50.2	.....	.....	.....	104.5
Hastings	.....	.5	.....	165.0	3.5	3.5	.....	130.0	10	6	.....	100.0	.....	1	.....	135.0
Kent	.....	.5	.....	142.5	6	3.5	.....	154.4	12.5	6	.....	61.8	2	6	.....	117.2
Middlesex	.....	3	.....	101.3	7.5	4	.....	112.0	9.5	27.5	.....	96.0	.....	2	.....	101.3
Ontario	.....	.....	.....	312.3	9.5	6.5	.....	270.0	8	10	.....	188.1	.....	.....	.....	267.7
Peel	.5	1.5	.....	297.2	2	8	.....	295.9	1	21.5	.....	294.2	1	4.5	.....	310.7
Renfrew	.....	.....	.....	113.0	4.5	4.5	.....	61.0	.....	.....	.....	123.0	.....	.....	.....	103.0
Simcoe	.....	.....	.....	203.7	4.5	3.5	.....	189.8	5	4	.....	139.2	.....	.....	.....	178.6
Welland	.5	.5	.....	95.0	.....	.....	.....	90.0	2	1.5	.....	75.0	.....	.5	.....	90.0

The varieties of seed used in all plots were "Green Mountain," "Irish Cobbler" and "Dooley." The Northern grown seed used was certified seed, obtained from several growers; the old Ontario selected seed was from one grower; and the old Ontario Common was from the demonstration plot growers' own seed. Regarding this common seed, it is evident that owing to good progressive potato growers having been selected for this demonstration plot work, their seed would be better than average common seed; yield of 396 bushels per acre in Glengarry; 294.2 bushels in Peel; and 201 bushels in Carleton are recorded for common seed; whereas the average yield per acre in these Counties taken from final estimates, (Crop Bulletin 149) are: Glengarry, 69.1 bushels; Peel 93.6 bushels; Carleton, 80.9 bushels; yet in spite of this handicap the average results for the twelve Counties show the benefit of using certified, disease-free, Northern grown seed, or good selected Old Ontario seed, and this is fully in keeping with the results obtained in the three previous years' demonstration plot work.

The results for 1921 are given herewith in tabulated form, showing the percentage of "Leaf Roll," "Mosaic" and "Black Leg" and the yield in bushels per acre.

TABLE 3—RURAL NEW YORKER (DOOLEY)

County	Northern Ontario Percentage				Old Ontario Selected Percentage			
	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre
				bush.				bush.
Bruce	2.5	.5		98.8	4.5	2.5	.....	107.2
Carleton	.....	.....	.....	212.0	4	2	.....	20.90
Glengarry	4.5	.....	.....	154.0	7.5	1	.....	198.0
Haldimand	3	2	.....	43.6	2.5	.5	.....	65.6
Hastings	.....	.....	.....	142.0	3	.....	.....	128.0
Kent	3	3	.....	59.0	6	2.5	.....	117.1
Middlesex	8.5	2.5	.....	96.0	7.5	4.5	.....	116.0
Ontario	6	1.5	.....	212.0	7	1	.....	230.8
Peel	3.5	1	.....	202.9	7	2	.....	235.1
Renfrew	.....	.....	.....	112.0	4	1	.....	107.0
Simcoe	5.5	.5	.....	176.0	5	1	.....	169.6
Welland	.....	.....	.....	76.2	.....	.....	.....	80.0

It will be noted from the preceding tables that northern grown seed potatoes, both in the Irish Cobbler and the Green Mountain varieties, slightly outyielded potatoes obtained from other sources, though selected seed obtained from growers in old Ontario came a close second. There is a considerable difference between "selected" and "common" seed from stock grown in old Ontario and this points to the advisability of farmers taking greater care in selecting seed for planting on their own farms.

The figures in reference to disease are quite striking—the Northern Ontario seed being fairly free, whereas the seed potatoes from old Ontario "common" are comparatively high.

TABLE 4.—Herewith is given a Summarized Statement showing the average percentage of Leaf Roll, Mosaic and Black Leg, together with the average yield in bushels per acre of all varieties and from various sources, as grown in 1921.

	Irish Cobblers Percentage				Green Mountains Percentage				Rural New Yorker (Dooley) Percentage			
	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre	Leaf Roll	Mosaic	Black Leg	Yield per Acre
				bush.				bush.				bush.
Northern Ontario	1.4	.2	.08	155.5	.5	.9	.1	182.7	3.4	.9	.....	132.8
Old Ontario Selected	6.4	2.7	.....	146.2	4.6	4.2	.....	170.7	4.8	1.5	.....	146.9
Old Ontario Common	8.2	4.2	.04	134.6	5.5	6.5	.....	154.3	.....	.....	.....	.....
Maritime	1.1	.2	.1	148.5	.6	1.4	.....	166.4	.....	.....	.....	.....

TABLE 5.—AVERAGE YIELD IN BUSHELS PER ACRE OF POTATO DEMONSTRATIONS, 1918-1921

No. of demonstrations	Year	Green Mountains				Irish Cobbler				Rural New Yorker (Dooley)	
		Northern Ontario	Maritime	Old Ontario Selected	Old Ontario Common	Northern Ontario	Maritime	Old Ontario Selected	Old Ontario Common	Northern Ontario	Old Ontario
22	1918	174.9	141.3	168.0	.....	154.7	148.8	122.8	.....	.....	.....
24	1919	169.5	168.7	166.0	.....	131.8	107.6	120.4	.....	.....	.....
11	1920	218.3	215.7	215.8	189.2	198.0	210.1	201.1	164.9	210.7	202.3
12	1921	182.7	166.4	170.7	154.3	155.5	148.5	146.2	134.6	132.8	146.9
Average		186.3	173.0	180.1	171.7	160.0	153.7	147.6	149.7	167.2	174.6

The demonstration plots of the Dooley variety, Rural New Yorker type of potato, were planted with the object of determining if the northern grown seed of this type was superior to the old Ontario selected seed of the same type, but the results appear to prove that although there was slightly more of the diseases, leaf roll and mosaic in the old Ontario selected seed, it outyielded the Northern Ontario grown seed by 14 bushels to the acre. It may be that being a late potato the Rural type is not suited to the Northern Ontario conditions on account of its longer growing period, or that a poor yielding strain is being raised by the grower who supplied this northern seed, as in this case the northern grown seed is all from the one source. The Rural type of potato is not grown to a large extent commercially in the northern districts. The average yields from these plots were 146.9 bushels per acre from selected, and 132.8 bushels from northern grown.

Another set of demonstration plots were planted in Essex, Lambton, Elgin, Brant, Oxford, York, Wentworth and Huron Counties for the comparison of Dooley selected seed with common seed planted side by side. The average yield for all plots was 127.7 bushels for the Dooley selected and only 80.9 for the common, this being 46.8 bushels per acre in favour of the selected seed; in Wentworth County the selected seed yielded 180 bushels to 45 bushels for the common.

The results as obtained in 1921 for the Dooley selected seed as compared with common seed, any variety, as grown by the farmers on whose farm the demonstration was conducted, are as follows:

TABLE 6.—Comparison of Dooley Selected Seed with Common Seed.

County	Dooley Selected Seed	Common Seed	
	Yield in Bushels Per Acre	Yield in Bushels Per Acre	Variety
Brant	136.2	98.5	181.0 Green Mountain School Fair Seed.
Elgin	119.7	109.6	Green Mountain.
Essex	90.0	22.5	Irish Cobblers.
Huron	60.0	70.0	Hustlers.
Lambton	120.0	96.0	Dooley.
Wentworth	180.0	45.0	Green Mountain.
York	187.5	125.0	Delaware
Average	127.7	80.9	

The following tables give the average results of the potato demonstrations for the four-year period, 1918-1921—in yields per acre, in bushels, for Irish Cobblers, Green Mountains and Dooleys and the average percentage of such physiological diseases as leaf roll and mosaic:

In commenting upon the average results for the four-year period, not only from the standpoint of yield per acre, but also from the standpoint of freedom from such physiological diseases as leaf roll and mosaic which seriously affect the yield and quality, I think growers would be well advised to look to Northern Ontario for their Irish Cobbler and Green Mountain seed potatoes or else pay more attention to selecting their own seed or secure certified seed from growers in old Ontario who have had their fields and bins inspected according to standards adopted for the production of certified seed.

TABLE 7.—AVERAGE PERCENTAGE OF LEAF ROLL AND MOSAIC—POTATO DEMONSTRATIONS, 1918-1921.

Year	Green Mountains				Irish Cobblers				Rural New Yorker (Dooley)	
	Northern Ontario	Maritime	Old Ontario Selected	Old Ontario Common	Northern Ontario	Maritime	Old Ontario Selected	Old Ontario Common	Northern Ontario	Old Ontario
Leaf Roll:—										
1918	1.2	3.5	8.8	16.2	1.4	5.1	45.5	78.3	.....	.....
1919	.4	.4	1.4	5.3	.6	.9	1.8	5.3	.....	.....
1920	.41	.18	1.8	1.8	.27	.77	3	13	1.6	1.3
1921	.5	.6	4.6	5.5	1.4	.1	6.4	8.2	3.4	4.8
Average for 4 years. . . .	.62	1.17	4.1	7.2	.91	1.9	14.1	26.2	2.5	3.05
Mosaic:—										
1918	3.0	61.8	29.3	31.	1.2	3.1	2.4	3.3	.....	.....
1919	1.1	2.0	2.7	3	1.0	.7	.7	3	.....	.....
1920	1.4	1.5	22.8	51.7	1.8	.36	.77	3.3	5.6	5.08
1921	.9	1.4	4.2	6.5	.2	.2	2.7	4.2	.9	1.5
Average for 4 years. . . .	1.6	16.7	14.7	23.05	1.0	1.09	1.64	3.4	3.2	3 29

The figures in Table 7 giving the percentage of leaf roll and mosaic help to show the benefit of using seed as free as possible from physiological diseases such as leaf roll, mosaic, curly dwarf, etc., and as these diseases are spread rapidly through the fields by insects and other means when conditions are right, the smaller the amount of diseased sets planted the less chance there is of its spreading through the field and perhaps making a very noticeable reduction in yield as well as leaving the crop unfit to use for seed purposes again.

These demonstrations will be continued during 1922 with the object of securing still further information on seed potatoes from different sources and diseases of the potato crop.

Demonstration and Experimental Work.

Sunflowers were grown in a number of sections throughout the province as an ensilage crop, especially in the northern districts where the short growing season does not permit corn to mature sufficiently. In every case the reports indicate that very satisfactory results were obtained. The sunflowers gave larger yields than corn in every case and very satisfactory feeding results. The Representative for Algoma reports that one farmer in that district more than doubled the flow of milk from his cattle with sunflower silage. The Representative for Sudbury reports that the Superintendent of the Industrial Farm at Burwash obtained excellent results from feeding twenty lbs. of sunflower silage per cow per day. The reports of the Representatives in Northern Ontario would indicate that a much larger acreage of sunflowers will be planted in the future.

Lime.

Experiments with lime have been conducted under field conditions during the past year and, while the season was not favourable, the highest yields were obtained from liming. Frontenac reports that the results from the use of lime on celery were very noticeable and in favour of the lime. He also reports that in an experiment where lime and basic slag were used, the lime plot gave the largest yield by more than one ton per acre and more than two tons over the check plot. Farmers are showing considerable interest in the use of lime for correcting acidity and improving the texture of the soil, but at the same time it is doubtful if it is being as extensively used as its proven value warrants.

Grasshopper Control.

More or less serious outbreaks of grasshoppers occurred in Algoma, Grey, Manitoulin and Norfolk during the summer of 1921, and demonstrations in control measures were conducted by the Representatives interested. Farmers were advised to use the poisoned bait recommended by Professor L. Caesar, O.A.C., Guelph, and in the majority of cases where the work was systematically carried out, effective results were secured. The grasshopper bait recommended was as follows: two bushels hardwood sawdust, one pound of white arsenic or Paris Green, one pound salt, one pint molasses, about three gallons of water or just sufficient to moisten thoroughly without making sloppy. Best results were obtained when this bait was applied early in the morning, preferably when the weather was cloudy. Grasshopper outbreaks have occurred at different times at various points throughout the province and experience in control measures indicate that this pest can be very effectively controlled by poison bait if used before the grasshoppers have developed sufficiently to fly. If they have developed sufficiently to fly and can thus migrate considerable distances, control measures are less effective.

Canning Demonstrations.

As has already been mentioned under Home Garden Contests, a number of canning demonstrations were conducted in Middlesex County. These demonstrations were popular and much appreciated by the girls in the Strathroy district. The attendance ranged from fifteen to thirty girls at each demonstration. In Lennox and Addington a canning demonstration was conducted at the Napanee Agricultural Fall Fair. This demonstration proved to be very interesting and instructive to a great many of the women and girls attending the fair.

Advisory Agricultural Council.

For some time past, it has been felt that a closer co-operation between the department and the local people would be mutually advantageous in carrying on the work undertaken by the Agricultural Representatives. It was thought that this could be best brought about by having the County Council appoint an Advisory Agricultural Committee to meet and confer with the Agricultural Representative.

Accordingly, a few counties were asked to appoint such a committee at the January, 1921, session of the County Council, to test the usefulness of the plan. I am glad to say that Advisory Agricultural Councils were appointed in the Counties of Peel, Prince Edward, Brant, Waterloo and Renfrew, and the committee has worked with the Agricultural Representative throughout the year. Reports received would indicate that the plan has worked out splendidly. The Agricultural Representative receives the hearty co-operation of the farmers in the district and the farmers themselves seem anxious to assist in solving problems, particularly so when they have a voice in planning and putting into effect work which has for its object the bettering of conditions on the farm.

The suggested plan of organization together with a brief statement as to the nature of the work of the Advisory Agricultural Council as laid before the County Councils, is as attached herewith.

COUNTY ADVISORY AGRICULTURAL COUNCIL

Name

The organization shall be known as The.....County Advisory.... Agricultural Council.

Membership

1. Such Council shall be made up of one representative of each agricultural Township in the County or group of Townships in a large County. The suggestion is made that committee shall consist of not less than five and not more than ten.
2. Each person appointed by the County Council to the Advisory Agricultural Council shall be a bona fide farmer resident in the Township or District he is appointed to represent.
3. In the appointment of representatives of the different Townships or Districts the County Council is urgently requested to give fair consideration to all branches of agriculture in the County and to make appointments representative of each branch or type of farming.

Method of Appointment

1. The Advisory Agricultural Council shall be appointed at the first statutory session of the County Council in each year.
2. The members of the Council shall be appointed by the County Council.
3. In order to secure continuity of service one half or approximately one half the members shall be appointed for one year and the balance for two years, and their successors appointed for two year terms in each case.
4. Members of the Advisory Agricultural Council may be reimbursed by the County for services and expenses while attending meetings and the basis of payment for members of the County Council is suggested a basis which might be applied.

OFFICERS

The Advisory Agricultural Council shall at its first meeting appoint from among its members:
(a) Chairman.
(b) Vice-Chairman.
The Agricultural Representative shall act as Secretary of the Council.

MEETINGS

1. Two meetings shall be held annually, viz., first week in February and first week in November.
2. Special or emergency meetings shall be held when necessary at the call of the Chairman.

DUTIES OF ADVISORY AGRICULTURAL COUNCIL

To advise and co-operate with and make suggestions to the Agricultural Representative in reference to the work of the Department of Agriculture in the County by:—
1. Reviewing the work already done by the Agricultural Representatives.
2. Making a survey of the agricultural industry or business of the County.
3. Planning, adopting and putting into effect work which has for its object the advancement of the agricultural industry in the County.
All plans of work shall be subject to the approval of the Ontario Department of Agriculture.

The plan has worked so well that next year arrangements will be made to have such a committee appointed in each county to work with the Agricultural Representative.

FARM LABOUR.

The demand for farm labour was not so great during the past year as formerly, and generally speaking, farmers were able to secure their requirements at reasonable wages. In most sections of the province during the busy season the available supply of labour seemed to be absorbed but at the same time there was not the acute shortage so noticeable in former years.

A large number of immigrants were placed on farms throughout the province and the Agricultural Representative for Middlesex County reports that approximately seven hundred immigrants were placed in Western Ontario, one hundred and seventy-five of whom were placed in Middlesex County. The Agricultural Representative for Peel County reports that in co-operation with the Department of Colonization, 491 labourers were placed on farms in Peel County, and that there were placed from all sources 1,576 labourers on farms.

Wages paid to farm labourers varied through the province as follows:

Married men	$500 to $700 with cottage.
Experienced single men	$ 30 to $45
Partly experienced single men	$ 25 to $ 30
Inexperienced single men	$ 18 to $ 20
Boys	$ 8 to $ 15

DRAINAGE SURVEYS AND DEMONSTRATIONS.

In as much as the offices of the Agricultural Representatives are equipped with drainage instruments, they are often called upon to make surveys for farmers who find it necessary and profitable to drain more or less extensive areas of their farm lands as circumstances and finances will permit. The following tables show the extent and nature of the drainage survey work:

Drainage Surveys and Demonstrations.—*Continued.*

County	No. of Surveys made	Acreage surveyed	No. of profiles made
Brant	1	.....	.....
Bruce	4	127	3
Carleton	2	.....	15
Dufferin	4	.....	.....
Dundas	3	150	3
Elgin	35	700	40
Essex	4	125	4
Frontenac	1	.....	.....
Glengarry	1	15	.....
Grenville	1	.....	.....
Grey	5	100	.....
Halton	7	60	.....
Huron	4	70	4
Lambton	5	375	.....
Lanark	6	200	6
Leeds	1	70	3
Lennox and Addington	11	117	4
Lincoln	2	13	1
Middlesex	20	650	10
Norfolk	3	.....	.....
Ontario	3	.....	1
Oxford	5	300	5
Peterborough	4	45	3
Perth	10	10	.....
Prescott and Russell	1	50	.....
Prince Edward	4	40	4
Rainy River	7	.....	4
Renfrew	5	.....	4
Simcoe	3	.....	.....
Victoria	.....	70	6
Waterloo	1	.....	.....
Welland	6	125	3
York	6	180	.....

The drainage survey work carried out by the representatives is more or less of an emergency nature, the majority of the larger and extensive surveys are being made by the staff of the Physics department of the Ontario Agricultural College which is specially equipped for this work.

Poultry Culling.

The culling of farm poultry flocks has received considerable attention by Agricultural Representatives during the last year and a large number of public and private demonstrations in poultry culling have been held. The results obtained by rigidly culling the removing the non-producing hens from the poultry breeding station flocks has probably been responsible in a large measure for the interest shown in this work. During the year 1920, poultry culling was undertaken in a few counties with excellent results and the work has now become quite general throughout the province, with the result that Representatives are continually receiving requests from farmers who desire to have the non-producing hens culled from their poultry flocks. We have no definite figures for the province showing the number of poultry flocks culled, nor the number or percentage of inferior birds removed, due to the fact that much of the work was done when the Representative was calling at farms on other business, and consequently did not keep records. Where public culling demonstrations have been held an effort has been made to train others for this work. In many cases junior farmers have taken up the work and are doing the poultry culling for the farmers in their districts. In this way the benefits of

Ground Hog Day in Brant County.

Owing to the alarming increase in the number of ground hogs and the consequent nuisance and danger, the Agricultural Representative of Brant County inaugurated a campaign to destroy them. The result was a ground hog killing day, in connection with which the Agricultural Representative reports as follows:—

"The ground hogs in many sections of the county are very numerous and are becoming quite a nuisance especially when using farm machinery. An effort was made during the spring to try and get as many people as possible throughout the county interested in destroying them. Accordingly a number of letters were written for the papers drawing people's attention to this and advising how to destroy them, the carbon-bi-sulphide method being the one outlined. The Township Councils were also written to, urging their co-operation and assistance towards financing some advertising to be done later. At a meeting of the Agricultural Advisory Council, it was decided to make June the first 'Ground Hog Killing Day.' The druggists were advised of this so that they might have sufficient carbon-bi-sulphide on hand and they were asked later to make a report as to the amount of increase in their sales during the period just previous to Ground Hog Day. Reports were obtained from most of the druggists of the county and varied considerably as to the amount sold, some in the city claiming very little increase while others had as high as 1,000 per cent. increase. While it was difficult to form an exact opinion as to the actual efforts put forth by the people to destroy the ground hogs, it was quite evident, however, that in some districts at least, the people made an honest effort to do their part.

During the summer I have heard many people speaking of the splendid results they had with the carbon-bi-sulphide.

As this was advertised through the papers some of the Toronto papers copied, the result being that I received a few inquiries from people many miles distant as to the method used."

Live Stock Breeders' Clubs.

Live stock breeders throughout the province are realizing more and more the value of organized effort and co-operation in promoting the live stock industry. This tendency is indicated by the increasing number of live stock breeders' clubs organized each year. The Agricultural Representatives are called upon to take an important part in this organization work and they are largely responsible for the organization and success of many of the breeders' clubs. These breeders' clubs are organized for the purpose of promoting the breed represented, encouraging the young or new breeder; holding educational meetings and consignment sales. These clubs have done good work in establishing a reputation as a breeding centre for their county or district, and in distributing foundation stock for new breeders of pure-bred stock.

Sheep Improvement Work.

The sheep promoters of the Live Stock Branch of the Federal Department of Agriculture for Eastern and Western Ontario, co-operated with the representatives in a number of counties in carrying on special work with sheep, consisting of dipping, docking and castrating of lambs in the spring, and the marketing of carlots of docked and castrated lambs in the fall. In Grey County, 6,813 sheep and lambs were dipped; in Dufferin County 2,018, and in other counties, varying numbers. Docking and castrating demonstrations were carried out on a scale sufficiently large to provide several carloads of docked and castrated lambs for market in the fall, from several counties. It was not always possible to secure carloads of lambs as planned in the spring, for marketing in the fall, due to varying dates at which the lambs reached market weight. Several carloads, however, were sent to the market and these invariably topped the market with prices of $1.15 per cwt. or more above the average.

In Eastern Ontario this demonstration work was followed up by the formation of Ram Clubs in Lanark, Renfrew and Lennox and Addington Counties. In the ram club work the Representative assisted the Live Stock Branch of the Ontario

Department of Agriculture which purchased and distributed the rams to the club members. In Renfrew, 20 rams, 10 Shropshires and 10 Oxfords were distributed to members of the ram club; in Lanark, 12 Oxfords; and in Lennox and Addington 11 rams, 9 Oxfords and 2 Shropshires. These pure-bred rams were distributed in sections where pure-breds were not used before and will doubtless have a marked effect in improving the quality of the sheep in these districts.

Wool Marketing.

The Agricultural Representatives have co-operated with the Ontario Sheep Breeders' Association in advancing the co-operative marketing of wool and large quantities of wool have been shipped to Guelph as a result of their efforts. They have been instrumental in facilitating the shipping of wool by assisting in distributing sacks and twine to the wool growers and by arranging for the collecting of the wool at central points for shipping in car lots, thus reducing the cost of marketing to the grower.

In reporting on the wool situation several representatives refer to the fact that owing to the very sharp decline in prices many farmers have taken their wool to the woollen mills to be made into yarn, blankets and cloth for domestic use. A number of the smaller mills have done considerable custom work of this nature during the past year.

Scrub Bull Campaign.

The live stock improvement campaign which was started in 1919, under the Live Stock Branch, and which had for its object the elimination of scrub sires from the herds on Ontario farms has been continued and extended. Very gratifying results have been obtained wherever the campaign has been undertaken, with the result that a large number of scrub sires have been disposed of during the past year. The representatives have given very material local assistance.

Fall Fairs.

Fall fairs throughout the province have in many cases co-operated with the Agricultural Representatives in providing prizes for junior classes in their prize ilsts and for competitions of different kinds on fair day. The Representative or Junior Farmers usually take charge of these special features of the fall fairs. In most cases liberal prizes have been provided for live stock judging competitions and these have been keenly contested by large numbers of junior farmers. Special prizes and classifications have been provided for junior farmers' displays, boys' and girls' competitions, and in some cases a special list of classes for juniors with special rules governing its junior exhibits. Experience has shown that many of the boys and girls taking part in school fair work, also compete in the junior classes at the fall fair, proving, as has been contended, that the school fair is a forerunner of the fall fair, and the recognition given to junior exhibitors will doubtless improve the larger exhibitions.

Soldiers' Settlement Work.

The Agricultural Representatives have continued to assist the Soldiers' Settlement Board in establishing soldier settlers on the land, but this work has fallen off very materially during the past year, and with few exceptions, Representatives have interviewed and reported on a relatively small number of prospective soldier settlers. Considerable work, however, has been done by Agricultural Representatives in visiting established settlers on their farms and in giving advice and assistance whenever the opportunity presented itself.

Home Demonstration Work.

Since the appointment of a home demonstrator in Peel County during the spring of 1918, great progress has been made in all phases of work connected with the rural communities. The work is greatly appreciated, particularly by the women and girls of the county. In fact her work is carried on very largely through the various branches of the Women's Institutes and the Junior Institutes.

During the past year, the home demonstrator, through the Agricultural Representaive for the County, conducted a special short course in Home Economics from January 4th to 28th, at Brampton, at which there was an attendance of fifty-four girls ranging in age from sixteen to thirty years. Special lectures were given on domestic science, home nursing and first aid, sewing, millinery, house-planning and decoration, child study and laws. In addition, members of the class took lectures with the agricultural class on such subjects as poultry, farm dairying, bees, vegetable and fruit growing. The home demonstrator reports: "Every member did something in cooking, sewing or bandaging before the class and most of them could tell the reason why."

A special ten-day course in home nursing and first aid was held at Alton, commencing on December 6, with an attendance of forty girls.

The Brampton Women's Institute arranged with a local dressmaker who gave courses of some ten days to two different groups of ten girls each.

Arrangements were made with the Extension Service of the University of Toronto to give a special series of lectures on cultural English, English literature and history to the members of the Junior Institutes of the County. The University supplied the instructor and paid the salary and the group institute paid travelling and local expenses. Classes were organized at Streetsville, where a series of fifteen lectures were given between November 15, 1920, and March 21, 1921, at which there was an average attendance of twenty-two. At Brampton a series of lectures commenced on October 18, 1921, the average attendance at the four meetings held during the fall being twenty-six. Cheltenham also organized a class, the first meeting of which was held on November 1st, with an attendance of twenty-seven.

These extension lectures are becoming a very popular feature amongst the young people of the rural districts and will be extended to other points.

While the Home Demonstrator is District Secretary of the Peel County Women's Institute and has to attend to correspondence, prepare reports, attend executive and committee meetings, one of the most important phases of her work is featured in the Junior Institutes which have been organized during the past two years at the following places—Alton, Cheltenham, Brampton, Ebenezer, Streetsville and Palgrave.

One can gain a fair idea of what the Junior Institutes are doing from the report of the Home Demonstrator:—

"Cheltenham Junior Institute has carried on a fairly successful campaign to make their influence reach every girl within a ten mile radius, unless a member of another group. Programmes are balanced according to the 'something to hear, something to see, something to do' rule and prepared in advance. After the literary and musical programme, two girls gave a cooking demonstration. Each month, meetings are varied with sewing. Two boxes containing quilts and children's clothing have been forwarded to the Soldiers' Settlement Board. Letters from settlers' wives expressing appreciation have spurred on to greater effort for this fall and winter. These girls are sending magazines regularly to lonely women in Northern Ontario.

University Extension has been started with the Junior Farmers, with whom the girls co-operate for many social affairs and a few regular meetings.

A bazaar, a picnic, a concert have all been successful.

A team of these Juniors judged Home Economic classes at Brampton and Caledon School Fairs."

As in former years the Home Demonstrator conducted a judging competition in cooking and sewing at the Brampton Fall Fair. Teams of three girls were organized with the six Junior Institutes, and twenty demonstrations were given.

The Agricultural Representative and the Home Demonstrator co-operated with the Public Health and Child Welfare Committee of the Peel Women's Institute in securing a school nurse for the county. The various branches of the Women's Institute together with the special grant from the county supported the project financially. A beginning has been made and so enthused are those over the success of the movement that the appointment of a school nurse is likely to be more or less permanent.

A report of the school nurse for the period April 12, 1920, to June 12, 1921, will be of interest:—

132 school visits.
39 schools had second visits and 8 a third.
697 home visits—329 consultations.
512 tooth brushes sold to pupils.
3,005 pupils examined in first inspection.
1,994 pupils received general classroom inspection on return visits.
6,213 defects accounted for as follows:

Vision	607	Enlarged glands	597
Hearing	116	Defective speech	55
Eye disease	172	Skin Disease	99
Ear disease	7	Orthopædic defects	8
Nasal breathing	884	Nervous disorders	43
Tonsils	973	Cardiac disease	3
Anæmic appearance	231	Defective palate	3
Teeth	2,355	Mentally retarded	35
Malnutrition	15	Normal	47

Terminations found by this nurse number 125. Twenty-six of these were throat cases, the others attention to eyes and teeth. Doubtless there were many more terminations not reported in schools not visited a second time."

The school nurse promotes school health, inspects sanitary conditions about the schools, assists in holding health clinics and generally promotes health matters in the schools and homes of the county.

In addition to the activities of the Home Demonstrator just enumerated, physical culture classes for girls have been held, newspaper articles have been written on various subjects, school and home visits have been made incidental to other projects, travelling libraries have been secured, meetings have been addressed, correspondence has been attended to and a considerable portion of time was spent in the office interviewing callers and generally planning the work.

A statistical summary of the work of the Home Demonstrator will show that it has been caried on very energetically: —

Office calls	1,000
Phone calls	936
Letters received	598
Letters sent	621
Circular letters sent	1,415
Bulletins given out	753
Meetings addressed	93
Attendance	3,287
Schools visited	8
Rural homes visited	61
Newspaper articles	35
New organizations formed	2
Half days in office	371

COLONIZATION AND IMMIGRATION

The number of farm labourers placed for the fiscal year, ending October 31st, was 2,360, women 371, and children 458, making a total of 3,189. These were distributed in the different counties.

Some of these families consisted of ten, eight and six children, of which two-thirds were of working age. The Empress of Britain party docked at St. John, April 19th, 1921, numbered 140, and was in charge of an officer of the London, England, office. The married couples were of a fine type, and this year's arrivals were of a much superior class. The information we have received is to the effect that the greater majority remained where placed.

Work in Great Britain.

Agricultural workers and domestics sent to Ontario through the London office of the Agent-General for Ontario, during the year ending Oct. 31st., 1921.

Males.	
Single experienced	798
Married	379
Single inexperienced	293
Married inexperienced	5
Boys under fifteen	845
Females.	
Domestics	136
Wives	255
Girls under fifteen	412
	3,123

Capital in possession of these settlers on arrival in Canada £101,531. During the past year the London office has been successful in securing for Ontario a good number of experienced Old Country farmers possessing capital. These men have been agriculturists of a very superior type, practical and experienced, and certain to prove a decided acquisition to Ontario.

Assisted Passages.

The number of assisted passages granted by the London office during the past year has been as follows:

Domestic Servants	126
Agricultural Labourers	8

Information Bureau.

In order to deal promptly with requests for specific information, an efficient Information Bureau now exists, where a considerable accumulation of facts and figures relating to Ontario is made readily accessible.

During the past year some thousands of articles, paragraphs and photographs of Ontario have appeared in the newspaper press of the United Kingdom. This is done systematically and regularly by the Publicity Representatives, and an immense amount of useful publicity has been obtained through our service of news, without any further outlay than the cost of paper and postage. Newspaper men are almost daily visitors to the office and their requests for information, photographs,

etc., are courteously attended to. One hundred and seventy thousand, two hundred and fifty-one pieces of literature, including illustrated booklets and maps describing Ontario have been distributed to enquirers and intending emigrants through the London office, at agricultural shows, and by shipping agents in every part of the Kingdom. Literature has also been supplied to many public libraries and schools. A number of sets of lantern slides of Ontario are in circulation. Frequent invitations are also received by the Agent-General to attend public and private gatherings of an educational and social nature, which furnish an opportunity for addresses and speeches describing Ontario. Good use has been made during the past year of various consignments of exhibits which were sent to London by the Department of Agriculture in Toronto. These exhibits of Ontario fruit, vegetables, minerals and other products have been shown to the public in our own shop window in the Strand, London, at the Dairy Show, the Bath and West of England Show, the Highland Show, the Royal Agricultural Societies Show, the Imperial Fruit Show and elsewhere. Some hundreds of thousands of people saw these exhibits throughout the country and were intensely interested in them. Every day we observe proofs that our general publicity work is succeeding in making Ontario better and more favourably known among the people of the British Isles. During the past year the use of the cinema by the London office for the purpose of making Ontario better known throughout the United Kingdom has been very greatly extended. A number of excellent Ontario films have been from time to time obtained and many copies made for circulation over a chain of one thousand different cinema theatres, at the rate of about sixty a week. Two or three million people have seen Ontario in moving pictures several times during the past year.

Trade Enquiries.

The London office is admirably situated for assisting to promote the export trade of Ontario. Almost daily enquiries from business houses in Great Britain were received for information concerning the products and manufactures of Ontario, and in many instances, prospective buyers have been placed in touch with shippers in our province. Business men on a visit to England very frequently call at the office of the Agent-General for information, introductions, etc. Every business man from Ontario Province who visits London is invited to make use of the facilities of the Ontario Government office in London.

KEMPTVILLE AGRICULTURAL SCHOOL

During the past year the school enrolled its first regular class of students, the class being composed of twenty-five young men from the counties lying east of and including Lennox and Addington counties. During the present year, sixteen students are enrolled in the Senior year, and thirty in the Junior year, while the Domestic Science class contains seventeen girls. The short course in general agriculture and farm mechanics conducted in February, 1921, was attended by seventy-three, many of whom have expressed a desire to attend the regular classes, and will undoubtedly do so when the economic conditions existing in Eastern Ontario at present have been relieved by a more bounteous harvest than was secured during the past season of drouth.

The students' residence erected during the past summer is a very desirable acquisition to our institution. It is very conveniently planned and comfortable, and its modern equipment is greatly appreciated by our students. The accommodation in the boys' section is already completely occupied. This building makes it possible for the staff to create the necessary school spirit and also enables the students to more conveniently take advantage of those school organizations which are so essential to the development of all students and especially of young men and women from rural communities.

During the past year a poultry plant was built and stocked with Barred Rocks and White Leghorns from the poultry department at the Ontario Agricultural College, Guelph. The first colonies of an apiary have been purchased. Both these departments are to be given considerable attention in the future, as both are receiving greater attention in this section of the province, as proven by the increasing number of inquiries and requests for foundation poultry stock.

Work With Live Stock.

Accommodation for live stock has been improved by overhauling an old barn, in which are now housed the growing heifers; and also a needed addition to the hog pen. At present the farm is carrying the following live stock: horses, 10; Holsteins, 34; Ayrshires, 10; Shropshire sheep, 29; Yorkshire hogs, 53.

As in the past years we exhibited at the Central Canada Exhibition and at the Ottawa Winter Fair, Holsteins, Yorkshire swine and Clydesdales bred on the farm and were successful in winning with many entries. This work has proven an excellent advertising medium; is not extravagant in feed costs as we exhibit only young animals whose proper development is only made possible by generous feeding and care; is the medium of making satisfactory sales of young breeding stock; while the fitting of stock for show is made a part of the instruction we give to students.

Official testing of the dairy herd has developed three 100-pound cows during the past year—Monklind Jennie Lind (thirteen years), Goldie Keyes Camille (five years) and Daisy Mercena Pontiac (four years). Goldie Keyes Camille gave over one hundred pounds per day for fifty five days, her best day being 113.5 pounds, while she will produce nearly 26,000 pounds during her year. Daisy Mercena Pontiac's R.O.P. record as a three-year-old was last year 18,320 pounds, and in less than thirteen months she also gave us four living calves, the two older being prominent

prize winners in the show ring. Recently she has milked 112.5 pounds in a day—three milkings. Monklind Jenny Lind, while almost fourteen years old, has about completed an R.O.P. record of nearly 24,000 pounds. The record of all our cows mature and heifers, during their last milking period follows:—

Holsteins	Age	Yield	Time
MATURE HERD			
Goldie Keyes Camille	5	23,459.0 (R.O.P.)	303days
Monklind Jenny Lind	13	20,893.2 (R.O.P.)	295 "
Mercena Rue Lass	6	15,591.9 (R.O.P.)	365 "
Margaret Pontiac Pride	6	13,959.2 (R.O.P.)	272 "
Pontiac May Echo Walker	4	10,147.3 (R.O.P.)	290 "
Toitilla Rue	12	9,544.2	291 "
JUNIOR HERD			
Daisy Mercena Pontiac	3	18,320.9 (R.O.P.)	365 "
Waldorf Jenny Lind	2	11,954 (R.O.P.)	241 "
Fanny Tensen DeKol	2	9,272.2	365 "
May Tensen Colantha	2	8,998.9	365 "
Molly Rue Pontiac	3	8,406.6	365 "
K. A. S. Toitilla Lass	2	6,121.8 (R.O.P.)	269 "

Ayrshires	Age	Yield	Time
Sprucehurst Queen Nancy	9	9,784.9 (R.O.P.)	265 days
K. A. S. Alice	4	7,552.3	306 "
K. A. S. Queen	4	6,992.3	365 "
K. A. S. Patricia	4	5,726.9	259 "

Fruit and Vegetables.

The department of horticulture at the Kemptville Agricultural School, has only recently been formed and consequently is but little developed at this date.

An apple orchard of eleven (11) acres planted four and five years ago is developing creditably, and already some fruit has been gathered from the early bearing varieties.

About half the orchard is situated on a northern slope, the remainder on a southern, from such a situation it is hoped that much valuable data may be obtained in the future regarding winter injury, sun-scald, ripening of wood and other matters of interest to orchardists in this part of the province. The orchard contains a number of varieties, such as McIntosh, Fameuse, Duchess, Wealthy, Alexander, Wolf River and Russian Transparent, of these the McIntosh Red, Fameuse and Wealthy are most numerous. As this orchard contains no long keeping or winter varieties of apples, it has been considered desirable to plant in an adjoining area a number of the new winter varieties now being distributed by the Central Experimental Farm at Ottawa. There is not at present a first-class commercial winter apple for Eastern Ontario, and it is confidently hoped that several of these new varieties will meet this serious want.

Last summer the grounds, consisting of several acres, around the school buildings were cultivated throughout the season with the object of providing a clean seed bed upon which to start the lawns this spring. It is hoped that a considerable portion of the planting around the buildings may be done this season, the main roadways laid out and built.

Plans have been made for a vegetable garden, the products from which will supply to a large extent the needs of the school dining-room, and moreover provide some of the material that is required for instruction work during the school course, and which, up to the present, has been obtained from outside sources.

Good Seed Distributed.

The growing of registered grains at the Kemptville Agricultural School for sale to farmers in Eastern Ontario is being continued. In the spring of 1921 almost six hundred (600) bushels of registered Banner oats were sold, as well as smaller amounts of Huron wheat, O.A.C. No. 21 barley, Arthur peas, and some sweet clover seed. The installation of a cleaner and grader in the mechanics' building has greatly aided the securing of high-class seed.

Plots of different varieties of grains and grasses were grown for the purpose of providing suitable specimens for classroom work and also to test for yield, quality, etc., the more promising strains of the various varieties. A small plot of annual sweet clover was grown, the product of which will be used for more decisive tests this year.

Sweet Clover Results.

Further investigations with the white blossom biennial sweet clover have been conducted; definite figures for the composition and cost of production of sweet clover silage being obtained as well as data relative to the residual effect of the crop upon the soil.

The following table shows the chemical composition of the silage which was cut just before flowering, yielding ten (10) tons per acre, and put into the silo immediately.

Material	In Natural Condition	Water Free
Water	75.08	
Crude protein	4.74	19.03
Crude fat	.54	2.16
Carbohydrates	10.74	43.1
Fibre	6.7	26.89
Ash	2.2	8.82
Acidity	1.12	

Note.—Analysis made by Dr. F. T. Shutt.

Compared with corn silage it is evidently of somewhat higher feeding value.

A detailed statement of production cost shows sweet clover silage to have been produced for one dollar and ninety cents ($1.90) per ton. This does not credit the crop with pasture obtained later, or its manurial value.

Later in the fall, after pasturing was over, tests were made to determine its value as a soil builder, the following figures being obtained:

Material	Weight per acre	Nitrogen per acre	Phosphoric Acid per acre	Potash per acre
Leaves and stems	1,153	15.8	2.8	1.6
Roots	2,708	23.8	4.1	5.1
Total	3,861	39.6	6.9	6.7

It may thus be seen that compared with farm manure in actual fertilizing elements, it has a nitrogen equivalent of about four tons; phosphoric acid 1.25 tons, and potash ¾ tons. Its physical effect on the soil and its ability to control weeds are both valuable properties of the crop as well.

Data relative to cost of production of corn silage and mangels were collected the past season which are submitted herewith. In connection with the cost of corn silage, it may be noted that the early part of the season was excessively dry and that the commercial fertilizer and manure were not utilized to the same extent as in years of normal rainfall. This was reflected in the tonnage secured and in the cost per ton. The mangel crop was a particularly heavy one and appeared to suffer very little from the dry season.

In valuing the manure an arbitrary charge of two dollars ($2) per ton was used and half its value being debited to the corn and mangel crop, while three-quarters the value of the commercial fertilizer was charged to the crop upon which it was applied.

An itemized statement of costs is given below.

Dr.		Cr.	
Sweet Clover			
By man labour hours throughout season and horse labour hours throughout season. Man, 20c. per hr.; horse 10c. per hr.	$53 40		
By seed, 150 lbs. at $10.00 per bushel	25 00		
Seeding, ½ day (time divided between oats and sweet clover as both were sown at the same time)	2 50		
Rolling, ¾ day at $5.00 per day	3 75	To 75 tons Sweet Clover at $4.00 per ton	$300 00
Rent of land, 7½ acres at $5.00	37 50		
Tractor service, 2 days at $10.00 per day	20 00		
	$142 15		
Credit Balance	157 85		
	$300 00		$300 00
Corn			
By man labour throughout season, 552 hrs. at 20c	$110 40		
By horse labour throughout season, 686 hrs. at 10c	68 60		
By seed, 3 bush. at $2.75	8 25		
By fertilizer, 4-8-4 ¾ of 400 lbs. per acre 6.2 ac., 1860 lbs. at $75.00 per ton	69 75	To 102 tons corn silage at $4.00 per ton	$408 00
By rent of land, 6.2 acres at $5.00	31 00		
By 156 tons manure at half price ($1.00)	156 00	Debit Balance	36 00
	$444 00		$444 00
Mangels			
By man hours throughout season, 671.5 hrs. at 20c	$134 30		
By horse hours throughout season, 336 hrs. at 10c	33 60		
By 13 lbs. mangels (Giant White), seed at 75c	9 75		
By fertilizer, ¾ of 1,800 lbs. at $69.75	47 08		
By rent of land, 4.25 acres at $5.00	21 00	To 108 tons mangels at $6.00	$648 00
By 121.5 tons manure at half rate ($1.00)	121 50		
	$367 23		
Credit Balance	$280 77		
	$648 00		$648 00

Fertilizer and variety tests with corn were conducted as well as fertilizer tests with potatoes, and the tests of the efficiency of iron arsenate as an insecticide on potatoes were carried out, figures for which will be used as comparisons with results of further investigation.

VEGETABLE SPECIALIST

During the past year conferences were held in each one of the vegetable growing districts; these meetings were of one or two days duration. The subjects taken up were the diseases and insects affecting vegetables, the diseases of small fruits and the growing of vegetables and small fruits. The best men obtainable were secured as lecturers. The conferences were largely attended and very successful. Fertilizer experiments were conducted in co-operation with growers, with the view of acquainting the grower with the materials generally used and the effect of their application. Cabbage root maggot control work was carried on during the year. The result of the the past four years' work is now noticeable in the fact that the great majority of the growers use the corrosive sublimate method that the department has been advising. Considerable work was done to find a control of the onion root maggot. A liquid trap bait made by mixing one ounce of sodium arsenate, two quarts of molasses and one gallon water has been found to be an effective agent in the control of this insect. The control of celery blight and celery heartrot was very successfully demonstrated on one area in every celery growing section in the province. The tarnished plant bug is the agent responsible for conditions that lead to heartrot in celery. It was necessary to find a method of controlling both the insect and blight. The following dust formulæ—Bordeaux 20%, lime 30, sulphur 20, tobacco dust 30—mixed and applied with duster and blown into the heart of the plant once each week from the time the plants are set in the field, proved very effective. Many growers have lost heavily through tarnished plant bug injury after placing the crop in storage, the injury done by the bug not being noticed at the time the celery is being placed in storage. Tomato streak proved troublesome in a number of greenhouses during the year. This trouble is due to excess watering and overfeeding with nitrogenous fertilizers. The addition of phosphorus and potash in readily available forms and more care in watering and ventilating will prevent this trouble.

Potato seed inspection work was carried on as in past years. The change in regulations made by the potato council requiring an entry fee and an area of one or more acres before inspection would be undertaken has resulted in increasing the effectiveness of the work.

The judging of the potato fields in the field crop competition was undertaken by the vegetable specialist. This work has grown to considerable magnitude as indicated in the following summary:

Field inspection for certified seed—167 applications.

Field inspections and judging for standing field crop competition, 700 fields.

Field inspections and judging for combined standing field crop competitions, 80 fields.

Field inspections in Ontario for Canadian Registered Seed Growers' Associations.

Second field inspections for certified seed.

Tuber and bin inspection for certified seed.

Car inspection for certified seed.

From the 167 applicants, the quantity of seed which passed tuber inspection and was available for sale amounted to 35,000 bushels.

Experiments on ways and means of control of vegetable insects were carried on at Burlington in conjunction with the department of economic entomology officials.

Fertilizer experiments were carried on in co-operation with a large number of vegetable growers located in the principal vegetable growing sections. The result of these fertilizer experiments has been very satisfactory in that such have been a direct aid to the growers concerned, demonstrating values and proper use.

DEMONSTRATION FARM, MONTEITH

The work at this farm may in a general way be divided into two classes, that of giving direct aid to the settlers and to the operation of the farm.

In giving direct aid to settlers the greatest call is for aid in securing livestock. The northern clay belt is far away from districts that have a surplus of livestock. The Demonstration farm has at times a surplus of home bred stock, but not enough to supply more than a fraction of the demand without importing from districts farther south. During the year twenty-two cows, three bulls, eight sows, five boars, ninety young pigs, one ewe, ten rams, and fifteen hens were supplied to settlers of the district. The farm blacksmith shop has served the needs of the settlers living within driving distance.

The farm operations consisted of farm crop production and limited experimental work. The old meadows gave yield of one ton of hay per acre, and a good aftermath that was used for pasturage. The autumn wheat was killed to such serious extent during the spring period that it was plowed in and the land used for other crops. Oats and peas were sown as a silage crop, harvested in August and ensiloed. A twenty-acre area of heavy clay was seeded to oats and sweet clover at intervals beginning May 10th, and ending June 3rd. The early sown areas ripened well, but did not give the bulk yield characteristic of the June seeding. The sweet clover grew well over the entire area irrespective of the time of seeding. The plan of seeding, either alfalfa, sweet clover or red clover gives three opportunities for harvest, viz.: cured hay, grain for threshing or for silage, the same season and a clover stand that may be used as hay or silage the following year. Sweet clover plots seeded in 1920, grew and developed well. These plots were cut for hay in July, 1921, and gave yields of 3.34 tons to 4.1 tons dry hay per acre. The June harvested plots gave a good aftergrowth that matured seed. The plots harvested in July did not produce an aftergrowth.

Alfalfa was seeded in plots during June, 1920, as a variety test and also as a test of the value of inoculation with bacteria for this northern section. The inoculated plots gave a yield of 2.14 tons dry hay, twelve months after seeding, while the uninoculated plots yielded 1.7 tons dry hay. All plots did well. Alfalfa is a good prospect for the northern sections where the snow cover is ample.

Sunflowers were sown as the main silage crop on two different types of soil and at different seeding dates from May 25th to June 6th. The later sown areas gave the greater yields and the clay loam soils gave a better crop than the muck soils. All sunflowers were harvested and made into silage along with green peas and oats that were sown during the second week of June. The sunflower is recommended as a silage plant for the district.

Turnips have given only a fair yield, due to dry weather at seeding time. A seeding on July 2nd germinated and grew well, but being one month late did not complete growth before severe frost.

Livestock.

The sheep, Shropshire, purebreds and grades, have done very well during the year. The wool clip for 37 ewes averaged 8¾ pounds. The lamb crop consisted of thirty-six lambs from 37 mature ewes, and seven lambs from twelve-months-old ewes. Summer gains on bush pasture were good, lambs averaging 126 pounds in October at six months of age. The surplus purebred ram lambs were sold to settlers.

The herd of purebred dairy Shorthorns has been a disappointment as far as milk production is concerned. Some growthy heifer calves have been raised that may be an improvement on their dams. The Demonstration Farm having a large tract of rough land, all cattle except the milking cows are handled on a ranching basis rather than the stable method. Yearling heifers were carried over winter with a shelter consisting of a shed constructed of one-ply boards, battened and the door entrance covered by a canvas curtain giving freedom to the animals at all times. The surplus purebred bulls were sold to settlers in the district together with surplus homebred females and a carload imported from the district south of North Bay.

The Berkshire and Yorkshire swine have been prolific, all good individuals are sold to settlers with the stipulation that such shall be used for breeding purposes.

Improvements on the Demonstration Farm consist of the building of two miles of fence. Steel posts and barb wire are being used in fencing the rough pasture areas where the cattle are grazed. A fence of this type is easy to erect and will not burn. Electric light and power service has been installed in the main barn. The Pit silo has been tested out and proven very satisfactory for the district. A lining of masonry, either cement, stone or tile should be used, to prevent the soil caving in. With a subsoil of stiff, hard clay a wall can sometimes be held up by one-half inch thickness of cement plaster. No freezing troubles were experienced and the silage kept well. The effect of the tile drainage work done in 1914-15 was very noticeable during the spring. The tiled land was ready for the plow as soon as the frost was out while the undrained areas were not in fit condition for tillage until two weeks later. Hand-made cement drain tile was examined after being six years in the soil, and found to be in excellent condition.

Ontario Department of Agriculture

FORTY-SEVENTH ANNUAL REPORT

OF THE

Ontario Agricultural College

AND

Experimental Farm

1921

PRINTED BY ORDER OF

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1922

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To His Honour HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration, the Forty-seventh Annual Report of the Ontario Agricultural College and Experimental Farm, for 1921.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1922.

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ONTARIO AGRICULTURAL COLLEGE
AND EXPERIMENTAL FARM
1921

To the Honourable the Minister of Agriculture.

SIR:—I have the honour to submit herewith the Forty-seventh Annual Report of the Ontario Agricultural College and Experimental Farm, including the work of Macdonald Institute for the year 1921.

GENERAL SURVEY.

After a survey, extending over eighteen months, I wish to offer some suggestions regarding needs for the present and for the immediate future.

The college is in an entirely healthy condition so far as personnel and morale of staff, numbers and quality of students and the character of the work done are concerned. In equipment, in live stock and in scientific and technical appliances we are fairly well provided, as well as in buildings with certain exceptions to be mentioned. There are, however, certain branches of work which the changing conditions and problems of agriculture require to be developed, and certain forms of encouragement need to be adopted to keep the college in the front rank not only among institutions on the continent, but among Canadian agricultural colleges.

1. THE SCALE OF SALARIES. In 1920, the Department of Agriculture secured a large lump sum, I believe $50,000, as a grant to increase salaries in the Department. A generous proportion of this grant was allotted to the college, and large additions were hereby made to the salaries of most of the staff. I find upon later investigation, however, that, contrary to the practice in most educational institutions, industrial concerns, and even in some of the government departments, very little salary increase was granted to the college staff during the period from 1914 to 1919. Consequently, even with the increases granted in 1920, the scale of salaries remained lower than in institutions doing a similar grade of work, either Canadian or American. I am, therefore, recommending some considerable increases again for this year.

2. BUILDINGS. Some of the departments have fared well in quite recent years in the matter of physical equipment. Among these may be mentioned especially the departments of field husbandry, poultry, agriculture, and physics. Also the residence accommodation has been increased by the splendid new building, Mills Hall, a modern and comfortable residence for 130 students. The dairy building now being erected will enable the dairy department to widen its work and to bring its teaching and investigation of dairy problems up to date. The present horticultural building dates from the time when every natural science taught at the institution except chemistry was taught in that building. The late Professor Panton, an enthusiastic teacher and scientist, taught at one time practically all that was taught at the institution in Horticulture, Botany, Zoology, Physics, and Bacteriology; and what time he had to spare beyond teaching these subjects he spent in teaching English.

Since 1898, the year of Professor Panton's death, the departments of botany, zoology, bacteriology, and physics, have branched off, and found other quarters, leaving horticulture in the old building. It is now quite inadequate to the needs of the department, and a new building should be provided as soon as funds can be found.

The present animal husbandry building until eight years ago housed three departments, field husbandry, bacteriology and animal husbandry. In 1914 the field husbandry department moved into its present quarters, the bacteriology department immediately absorbed most of the space vacated with its laboratories, and now threatens to crowd the animal husbandry staff out of the class-room and the offices they still hold. Bacteriology now requires the whole building.

It has been supposed that the live stock department will always find its work-rooms for instruction and investigation in the various stables, with the aid of the judging pavilion. The development of the idea of instruction in marketing, however, has created a new need for the live stock department. For a complete knowledge of commercial classes of live stock, it is now believed that it is not sufficient to know the live animals. They must be judged on the hoof, and then on the block, in order to confirm or to correct the judging of the live animals. The live stock departments of most agricultural colleges are now provided with abattoir. A new building containing abattoirs, a larger judging pavilion for the two classes simultaneously, and offices, is required for the animal husbandry department.

Another branch of instruction which the changing methods of farm work have made necessary is that of Agricultural Engineering. The colleges of Western Canada are in advance of Guelph in this matter, just as power farming has been adopted on the larger farms of Western Canada earlier than in Ontario. There has been a sudden increase of interest in mechanical appliances for the farm, as is shown by the large short course classes that have assembled at Guelph in the last few years to receive instruction in farm machinery, and especially in mechanical power applied to field work. An extension of the Mechanics building is required to provide for storage of machinery and instruction in the handling of oil, gasoline, and steam engines, along with labor-saving devices for barn and stable.

Progress.

The three aspects of college work—resident teaching, extension and experimentation—are capable of large if not indefinite increase. Resident teaching progresses in volume and in character as the number of students increases, and as new subjects in agricultural science are applied to agricultural practice. Research and experimentation find new and wider opportunities as agriculture becomes more intensified, and as new or improved varieties of plants and animals come into use, and new systems of farming and new ways of doing farm work are adopted.

The problems relating to agricultural production formerly were considered to exhaust the field for agricultural research. More recently it has been discovered that the farmer's prosperity and the well-being of country life depend on factors outside of production. The tyranny of the market has driven many a good farmer off the land, and the conditions of country life, with respect to roads, schools, recreation and social opportunities have been the determining factors in inducing many a country family to take up their residence in town.

Accordingly, if the agricultural college was to hold its place of leadership, it was necessary to make enquiries in these new fields—marketing, and country life. And a whole department for resident teaching, research and extension has recently been organized at the college for the purpose of studying and teaching costs of agricultural production, methods of marketing, country life, and rural citizenship. When the economic problems cease to engage the attention of this department exclusively, there is a series of mechanical, social, and civic questions that have been pressing for inquiry and solution. Among these are: household conveniences; rural beautification; organizations for improvement and recreation; organizations for better schools and churches; relations between town and country. Back of these questions are the questions of rural pride and rural confidence and rural solidarity. Country life cannot be on an assured and durable basis unless the people have confidence in themselves and a pride of calling and a faith in the possible resources of farming and country life. With these—confidence and pride and faith—will come better farming and better living. And rural solidarity is necessary before either the economic or the social situations can be adequately dealt with. The farmer as an individual can no longer do his marketing with efficiency, or live his life with satisfaction. But how this rural confidence and rural solidarity can best be developed is a very complex and puzzling question. That the agricultural college should take a hand in these matters, there can be no reasonable doubt.

In proportion to the increase in these problems of production, marketing, and country life, the opportunity and the obligation of the college increase to reach the people of the rural districts. Inquiry and research are futile unless the college is enabled thereby to maintain constructive leadership. We may have excellent doctrines, but unless these doctrines can be taught in the synagogues of the people and practised on their farms and in their homes and throughout the rural districts, the doctrines will not avail to save; therefore, the college must have an extension policy and an extension programme.

The progress in the work of the agricultural college is timed with the needs and the hopes of agriculture.

Especially now is it essential that no effort be spared to assist the farmer in securing economic justice in the markets, and to maintain the morale of country life. Deflation in prices struck the farmer first, and the prices of his produce over a year ago fell almost to pre-war levels, while prices of commodities he must buy are stubbornly holding to high levels. In the public interest, which is and must remain dependent upon agricultural prosperity, there never was a time when all public agencies for the advancement of agriculture, including the agricultural college, needed to be maintained at a higher level of efficiency than at the present moment.

College Attendance.

The following are the figures in each course held throughout the year:—

(Figures for general courses include students of winter term and new students of fall term).

General Course	631
Specialists in General Course Work	6
Manual Training (One year Normal Course)	3
Dairy Courses	191
Stock and Seed Judging	165
Poultry Raising	34

COLLEGE ATTENDANCE.—Cont.

Horticulture	69	
Apiculture	71	
Drainage and Drainage Surveying	11	
Farm Power	160	
		1,341
Domestic Science (at Macdonald Institute)		366
Summer Courses:		
High School Teachers—1st year 41, 2nd year 23	64	
Public School Teachers—1st year 221, 2nd year 125	346	
School for Rural Leadership	137	
Farm Mechanics	7	
High School Teachers (3rd year Specialists)	7	
		561
Total		2,268

ANALYSIS OF COLLEGE ROLL (GENERAL COURSE), 1921.

FROM ONTARIO.

Algoma	1	Kent	7	Prescott	6
Brant	12	Lambton	10	Prince Edward	3
Bruce	11	Lanark	12	Rainy River	1
Carleton	50	Leeds	8	Renfrew	6
Dufferin	2	Lennox and Addington	2	Russell	3
Dundas	4	Lincoln	22	Simcoe	14
Durham	6	Middlesex	20	Stormont	1
Elgin	6	Muskoka	8	Temiskaming	3
Essex	12	Nipissing	4	Thunder Bay	4
Frontenac	10	Northumberland	3	Victoria	2
Glengarry	8	Norfolk	10	Waterloo	11
Grenville	5	Ontario	11	Welland	5
Grey	9	Oxford	19	Wellington	45
Haldimand	12	Parry Sound	2	Wentworth	16
Halton	12	Peel	6	York	67
Hastings	6	Peterboro	4		
Huron	9	Perth	19	Total from Ontario..	52[illegible]

FROM OTHER PROVINCES OF THE DOMINION.

Alberta	10	Nova Scotia	21	Saskatchewan	7
British Columbia	24	Quebec	1		
New Brunswick	10	Prince Edward Island.	3	Total from other Provinces	76

FROM OTHER COUNTRIES.

Bermuda	1	Scotland	1	U.S.A.	6
England	11	South Africa	1	U.S. of Col.	2
Japan	1	Switzerland	1		
New Zealand	1	Trinidad	1	Total from other Countries	26

AGE AND RELIGIOUS DENOMINATIONS.

The limits of age in the General Course, 1921, ranged from 18 years to 40 years. The average year was 22.

Religious denominations of students registered for the fall term were:

Anglican	131	Disciples of Christ	5	Methodist	174
Baptist	46	Evangelical	2	No religion	6
Brethren	1	Friends	4	Presbyterian	217
Christadelphian	3	Lutheran	7	Roman Catholic	21
Congregational	10	Mennonite	2	Unitarian	2

DEGREES AND DIPLOMAS IN AGRICULTURE.

The following students graduated in 1921 with the degree of Bachelor of the Science of Agriculture (B.S.A.).

Agriculture Option.

Atkin, R., Department of Agriculture, Brampton.
Bissonnette, R. N., c/o Entomological Branch, Department of Agriculture, Ottawa.
Callister, G. J., Room 1800, 44 Broadway, New York.
Chapman, L. T., R.R. 5, Amherst, N.S.
Clark, H. R., Collins Bay, Ont.
Cuthbertson, J. A., R.R. 4, Perth.
Deneau, C. R. Amherstburg, Ont.
Edwards, G. H., Onondaga, Ont.
Ferguson, C. M., O.A.C., Guelph.
Foreman, E. C., Michigan Agricultural College, East Lansing, Michigan.
Frey, C., c/o Department of Agriculture, London.
Goodier, R. M., Maxville, Ont.
Grant, W. H., Salmon Arm, B.C.
Hall, J. A., Etwell, Ont.
Howarth, C. M., c/o B. H. Bull & Son, Brampton, Ont.
Ireton, A. G., Central Experimental Farm, Ottawa, Ont.
Irvine, S. D. Dalkeith, Ont.
Lee, C. M., R.R. 2, Paris, Ont.
Long, L. C., S.S.B., Edmonton, Alta.
Lowell, V. C., O.A.C., Guelph, Ont.
McCague, J. J. E., Department of Agriculture, Barry.
McIntyre, J. E. Campbellton, N.B.
McPhail, M. C., Department of Agriculture, Stratford.
McPharlin, J. G., R.R. 3, Essex, Ont.
Macdonald, J. A., O.A.C., Guelph.
Maybee, H. J., R.R. 6, Trenton, Ont.
Mitchell, A. R., S.S.B., 32 Adelaide St. E., Toronto, Ont.
Morton, B. W., Newmarket, Ont.
Morrison, S. H., 100 Howard St. Toronto, Ont.
Ogilvie, L. M., c/o J. B. Barron, Carberry, Man.
Pegg, J. L., R.R. 2, Claremont, Ont.
Riley, C. W., O.A.C., Guelph, Ont.
Rowlands, W. A., University of Wisconsin, Madison, Wisconsin.
Semple, J. A., S.S.B., Edmonton, Alta.
Sibbitt, R. H., R.R. 1, Kingston, Ont.
Stock, F. W., Tavistock, Ont.
Taylor, H. H., 14 McDougall Ave., Ottawa, Ont.
Thompson, D., Box 515, Whitby, Ont.
Thompson, G. J., R.R. 1, Stanleyville.
Trueman, H. L., Department of Agriculture, Woodstock, Ont.
Ure, R. D., R.R. 3, Maidstone, Ont.
Wadsworth, J, W., Steele Briggs Seed Co., Toronto.
Watt, A. L., 367 Lansdowne Ave., Toronto, Ont.
Williams, G. A., 201 Gordon, Guelph.
Wood, F. L., Department of Agriculture, Fredericton, N.B.
Wood, W. Y., Rockton, Ont.
Young, W. W., Brigden, Ont.

Chemistry and Bacteriology Option.

Fraser, G. S., Newfield, Ont.
Grimes, M. Graduate School, Iowa Agricultural College, Ames, Iowa.
Jukes, R. F., Amherstburg, Ont.
McCrimmon, J. G., R.R. No. 2, Williamstown, Ont.

Chemistry and Physics Option.

Elliott, G. A., Co. Feed and Seed Branch, Department of Agriculture, 28 Front St. E., Toronto.
Leggatt, C. W., 84 Forbes Ave., Guelph.
Nelson, C. S., Fenwick, Ont.
Waterman, S., O.A.C., Guelph.

Dairy Option.

Arsenault, D., 731 Tigler Bldg., Edmonton, Alta.
Brown, A. T., R.R. No. 9, Peterboro.
Christensen, J. E., Farmers' Dairy, Toronto, Ont.
Keillor, S. E. Wallacetown, Ont.
McKay, W. G., R.R. 4, St. Mary's.
McLean, J. M., T. Eaton Co., Creamery, Winnipeg, Man.
Smallfield, H. A., O.A.C., Guelph.
Whillans, H. G., Hurdman's Bridge.

HORTICULTURE OPTION.

Almey, J. R., c/o Chas. Rogers, R.R. No. 2, Forest, Ont.
Chase, Miss S., R.R. No. 1, Greenwich N.S.
Eidt, C. C., O.A.C., Guelph.
Fulton, A., c/o A. H. McLennan, Department of Agriculture, Toronto.
Jarvis, G. L., Grimsby, Ont.
Lewis, R. M., Honan, China.
McArthur, D. C., R.R. 4, Appin.
MacAdam, J. A., Vankleek Hill, Ont.
Matthews, T. M., College Heights, Guelph, Ont.
Shoemaker, J. S., University of Iowa, Ames, Iowa.
Sippel, O. A., O.A.C., Guelph, Ont.
Stoddart, T., 102 Woolfrey Ave., Toronto, Ont.
Strong, W. J., Experimental Station, Vineland Station, Ont.

RECIPIENTS OF ASSOCIATE DIPLOMAS, 1921.

Douglas F. Adams, 60 Binscarth Rd, Toronto.
Eric C. Arnold, Bracebridge, Ont.
Reginald E. Balch, 248 Beach Ave., Toronto.
C. Ernest Bennett, North Gower, Ont.
Norman M. Blaney, Box 3, Port Credit, Ont.
Hilliard Blow, South Mountain, Ont.
W. H. Boucher, Carp, Ont.
Charles H. Bowman, R.R. 1, West Montrose, Ont.
Sydney S. Brecken, R.R. 2, Georgetown, Ont.
Clarence Breuls, Ringwood, Ont.
J. Eric Brink, 127 Vansittart Ave., Woodstock, Ont.
George. W. Buchanan, Flesherton, Ont.
E. N. Buckley, North Vancouver, B.C.
William K. Bunner, R.R. 1, Port Hope, Ont.
William L. Burke, Walpole, Sask.
Ralph W. Burton, 599 Ingersoll Ave., Woodstock, Ont.
D. Gordon Campbell, R.R. 2, Listowel, Ont.
Charles E. Carbin, R.R. 2, Arthur, Ont.
Christopher L. Carr, 626 Sherbrooke St. W., Montreal.
Warren K. Champ, R.R.2, Harriston, Ont.
Esmond D. Clipsham, Sparrow Lake, Ont.
William H. Clutton, R.R. 3, Goderich, Ont.
W. Moffatt Cockburn, R.R. 1, Puslinch, Ont.
Russell R. Cohoon, 421 Lisgar St., Ottawa.
Oliver Constable, Stirling, Ont.
Stanley H. Davey, Meaford, Ont.
W. Roy Dickson, 145 Yorkshire St., Guelph.
H. B. Disbrowe, R.R. 4, Aylmer, Ont.
Elton J. Dyce, Meaford, Ont.
Morton Eddy, 43 Dalhousie St., Brantford, Ont.
George A. Ficht, R.R. 1, Currie's Crossing, Ont.
G. C. Findley, Manotick Station, Ont.
John F. Fraser, O.A.C., Guelph.
Herbert C. Fricker, 12 Braemar Apts., Wellesley Crescent, Toronto.
J. Aubrey Garner, R.R. 1, Chesley, Ont.
W. Bryden George, Parkhill, Ont.
Clarke H. Gilbert, R.R. 4, Paris, Ont.
Adam J. Graham, R. R. 1, Verner, Ont.
Howard W. Harvey, Grimsby, Ont.
Elmore J. Hellyer, Kenilworth, Ont.
David I. Hill, Staffa, Ont.
Keith B. Hillier, R.R. 1, Camlachie, Ont.
H. R. Hinchley, Box 533, Seaforth, Ont.
G. C. Horne, 28 Walker Ave., Toronto.
H. R. Horning, Harrowsmith, Ont.
Harris R. Howard, Lyn, Ont.
Clarence M. Huntsman, Beamsville, Ont.
Fred B. Hutt, Georgetown, Ont.
Walter F. Jones, Co. John Nephew, R.R. 1, Finch, Ont.
Stanley L. Joss, Almonte, Ont.
Leslie W. Kerr, Woodroffe, Ont.
J. Ross Kirk, Almonte, Ont.
Laughlin, Norman J., Belfountain, Ont.
George J. C. Lindala, 23 Alcorn Ave., Toronto.
Wilfrid M. Livingstone, Frankville, Ont.
Norman H. MacBeth, 161 Forest Ave., Hamilton.
J. Lawrence Macdermid, St. Catharines, Ont.
John W. S. MacKay, Fitzroy Harbour, Ont.
Gordon E. Mahoney, Keswick, Ont.
Earl S. Manning, R.R. 5, Forest, Ont.
A. Russel Marston, Caledonia Springs, Ont.
Edward A. Miller, R. R. 2, West Lorne, Ont.
Alfred T. Mills, Peterboro, Ont.
B. W. Morton, Newmarket, Ont.
George W. Mutrie, 44 Norwich St., Guelph.
Samuel E. McCallan, Agricultural Station. Bermuda.
John S. McGiffin, 161 James St., Ottawa.
Ralph M. McKenzie, Pakenham, Ont.
Wilfrid A. McKenzie, Thamesville, Ont.
James H. McLeod, Napanee, Ont.
William G. Nicholson, North Bruce, Ont.
Howard Nichol, Beeton, Ont.
North, Francis George, R.R. 1, Ariss, Ont.
Penney, Alfred B., Port Carling, Ont.
Frederick W. Presant, Blenheim, Ont.
Arthur G. Richmond, R.R. 1, Perth, Ont.
Roy G. Richmond, R.R. 1, Perth, Ont.
William K. Riddell, R.R. 2, Granton, Ont.
Clifford G. Riley, Milford Bay, Ont.
A. Nelles Rutherford, Box 485, Grimsby, Ont.
Gerald N. Ruhnke, R.R. 2, Turnerville, Ont.

Osborne L. Sager, St. George, Ont.
Norman C. Schell, R.R. 4, Woodstock, Ont.
Gordon A. Scott, Perth, Ont.
W. Elgin Senn, R.R. 3, Caledonia, Ont.
P. B. Sanders, 435 MacLaren St., Ottawa, Ont.
Smith, C. A., Cataraqui, Ont.
Smith, C. E., Stansfield, Truro, N.S.
Howard N. Sneyd, Sturgeon Falls, Ont.
Donald M. Sorley, R.R. 1, Ottawa, Ont.
James H. Stanley, 219 Gordon St., Guelph.
Isaac F. Stothers, R.R. 7, Lucknow, Ont.
Norman E. Synnott, R.R. 2, Stayner, Ont.
Edward A. Summers, Winchester, Ont.
Norman J. Thomas, R.R. 2, Guelph.
Allan F. W. Thompson, 23 Essex St., Strand, London, W.C., England.
Gerald J. Thompson, R.R. 1, Stanleyville, Ont.
Bert E. Tolton, R.R. 4, Guelph.
D. C. Turner, R.R. 2, Sheddon, Ont.
C. R. Twinn, 94 Morrison St., Niagara Falls, Ont.
William H. Upshall, R.R. 4, Port Elgin, Ont.
Arthur N. Ure, R.R. 3, Maidstone, Ont.
Jacobus R. VanHaarlem, 1217 7th Ave. S., Lethbridge, Alta.
William M. Wallace, R.R. 4, Woodslee, Ont.
Bernard A. Ward, Foster, B.C.,
Arnold A. Werner, Port Dover, Ont.
Albert E. Whiddon, Antigonish, N.S.,
Frederick H. White, Whitevale, Ont.
Wilfrid H. Williamson, Princeton, Ont.
J. W. Wadsworth, R.R. 1, Byron, Ont.
E. E. Wildman, Preston, Ont.
W. E. Wiltshire, R.R. 2, New Westminster, B.C.
Gordon C. Wilson, 41 Strathcona Ave., Brantford, Ont.
Joseph Wilson, Box 189, Oakville, Ont.
Perry F. Winch, Belhaven, Ont.
Robert Woods, Corbetton, Ont.

Professional Dairy School Certificates Issued During 1921.

Campbell, A., Maxville, Ont.
Corkery, T. F., Silverdale, Ont.
Cousins, R. R., Loch Katrine, N.S.
Currie, W. H. J., Hagersville, Ont.
Goldsmith, F. J., London, Ont., c/o Silverwoods Ltd.
Gowdy, C. E., Mildmay, Ont.
Hefler, W. I. St. Catharines, Ont.
Healey, M., Hanbury, Ont.
King, A. D., Cayuga, Ont.
Luther, L. H., Mohawk, Ont.
Mitchell, A. T., Kintore, Ont.
McKenzie, W. W., Stellarton, N.S.
McManus, E., Shoal Lake, Man.,
Morrison, J. S., c/o Bowes Creamery, Toronto.
Palmeteer, C. C., Castleton, Ont.
Robins, R. W., Thamesville, Ont.
Stanley, A., Walkerton, Ont.
Taylor, W. H., Woodham, Ont.
Trendell, P. C., St. George, Ont.
Uren, J. F., St. George, Ont.

Manual Training Certificate, 1921

Collier, S. F., Meaford, Ont.
Track, V. E., Box 574, Orillia, Ont.
Scott, G. E., Holstein, Ont.

MEDALS, SCHOLARSHIPS AND PRIZES AWARDED, APRIL, 1921.

1905 Scholarship.

($50 awarded by committee of staff to best "all round" man at close of third year)—R. J. Rogers, New Lowell, Ont.

Governor-General's Silver Medal.

(General profiiciency, first and second year work).—W. K. Riddell, R.R. No. 2, Granton, Ont.

George Chapman Scholarship.

($20 in books, proficiency in English, first and second year).—R. E. Balch, 248 Beech Ave., Toronto Ont.

Second Year Essay.

($10 in books).—W. F. Jones, R.R. No. 1, Finch, Ont.

General Proficiency, First and Second Year Work.

($10 in books).—W. K. Riddell, R.R. No. 2, Granton, Ont.

Farmer's Advocate Scholarship.

(General proficiency in Animal Husbandry, and Field Husbandry, in the first and second years).—W. K. Riddell, R.R. No. 2, Granton, Ont.

Scholarships of $20 each Awarded for Proficiency in First Year Work.

Degree Course.

Group 1.—W. D. E. Donaldson, 91 Cork St., Guelph, Ont.
Group 2.—F. R. Harrison, R.R. No. 2, Beaverton, Ont.
Group 3.—G. Wishart, Arnprior, Ont.
Group 4.—M. W. Staples, Orono, Ont.

Associate Course.

Group 1.—A. W. K. Wise, Kingswood, Boreham Wood, Herts, Eng.
Group 2.—H. N. Frampton, 7 Parchment St., Winchester Eng.
Group 3.—J. A. Simpson, Mooretown, Ont.
Group 4.—F. H. Barnsley, 44 Isabella St., Toronto, Ont.

WORK OF THE DEPARTMENTS

FIELD HUSBANDRY.

In 1921 there were 116 definite experiments with farm crops conducted in the trial grounds at the College. Some of these were conducted for the first time, while others were started more than a quarter of a century ago and have been continued throughout the whole period.

Outstanding Varieties.

It is exceedingly important for the farmers of Ontario to keep prominently before them some of the outstanding varieties of farm crops as determined by many experiments conducted at the Ontario Agricultural College. Some of these varieties have been grown in Ontario for a considerable length of time, others have been imported, an occasional one has been started from an individual plant, and a few have originated at the College through hybridization. Some of these leading varieties are as follows:—

Winter Wheat.—O.A.C. No. 104, and Dawson's Golden Chaff.
Spring Wheat.—Marquis and Wild Goose.
Spring Rye.—O.A.C. No. 61.
Winter Rye.—Petkus, and Rosen.
Oats.—O.A.C. No. 72, Banner, and O.A.C. No. 3.
Barley.—O.A.C. No. 21.
Emmer.—Common.
Buckwheat.—Rye.
Field Peas.—Potter, Arthur, and Canadian Beauty.
Beans.—Pearce's Improved Tree and O.A.C. No. 181.
Soy Beans.—O.A.C. No. 81.
Vetches.—Hairy.
Dent Corn.—White Cap Yellow, Golden Glow, and Wisconsin No. 7.
Flint Corn.—Longfellow, and Gold Nugget.
Sweet Corn.—Golden Bantam.
Sorghum.—Early Amber.
Sunflowers.—Black Giant, and Mammoth Russian.
Mangels.—O.A.C. No. 1, strain, and O.A.C. No. 2, strain of Yellow Leviathan.
Swede Turnips.—Good Luck, and Hall's Westbury.
Millet.—Japanese Panicle.
Pasture Rape.—Dwarf Essex.
Cow Cabbage.—Sutton's Earliest Drumhead.
Very Early Potatoes.—Stray Beauty.
Medium Early Potatoes.—Irish Cobbler.
Late Potatoes.—Green Mountain, Dooley, and Empire State.
Alfalfa.—Grim, and Ontario Variegated.
Sweet Clover.—White Blossomed biennial, Yellow Blossomed biennial, and Hubam.
Grasses.—Tall Oat, Orchard, and Meadow or Tall Fescue.

Different Classes of Farm Crops.

In each of the past seven years, a number of different classes of farm crops were tested in duplicate under similar conditions of soil and climate. Only pro-

minent varieties were used in this test. The object, however, has not been the comparison of varieties but rather to secure definite information regarding the relative productiveness of the different classes of farm crops. The following table gives the average of the seven years' tests in average yield of both straw and grain per acre:——

Classes and Varieties	Yield of straw per acre (tons)	Yield of grain per acre (lbs.)
O.A.C. No. 21 barley	1.80	2,641
O.A.C. No. 72 oats	1.97	2,557
Common emmer	2.07	2,284
Guy Mayle hull-less barley	1.67	2,227
Early Britain Peas	1.52	1,918
O.A.C. No. 61 rye	2.37	1,782
Wild Goose spring wheat	2.18	1,739
Red Fife spring wheat	2.22	1,666

It will, therefore, be seen that the O.A.C. No. 21 barley gave an average annual yield of nearly one thousand pounds of grain per acre more than the Red Fife spring wheat when grown under similar conditions. This experiment bears out other experiments which have been conducted at the College in showing that barley, in nearly all cases, gives a greater yield in pounds of grain per acre than oats.

Grains Grown in Mixtures.

The results of experiments conducted at the College over a number of years have shown that a combination of the best variety of oats and the best variety of barley grown together in the right proportion will produce on the average over 200 pounds of grain per acre more than either one grown separately.

In an experiment conducted in each of the past four years, the results show that oats and barley grown together produce a greater yield of grain than when this combination has received in addition Goose wheat, Golden Vine peas, or Common flax, in amounts of one peck, two, three, or four pecks. Not only was this true in the average of four years, but it was true in each of the years with three slight exceptions in 1918. It is important to grow together two varieties of grain which will ripen at the same time, such for instance, as the O.A.C. No. 21 barley and the O.A.C. No. 3 oats. These when combined at the rate of one bushel of each by weight makes a combination which is difficult to surpass in high productive power.

Varieties of Sweet Clover.

Bulletin No. 283 on "Sweet Clover as a Farm Crop" and consisting of 32 pages was issued within the past year. There is probably no crop which has a more interesting record than that of the biennial sweet clover which has been converted from a roadside plant to a farm crop in a comparatively short time. Interest is now more particularly focusing on what is known as the White Flowering Annual or Hubam sweet clover. Previous to 1921, this crop was grown entirely for seed production. Other than a few preliminary observations, there was apparently no recorded result of any experiment with Hubam sweet clover conducted in America previous to this year. Six distinct experiments with the Hubam sweet clover were conducted at our College in the past season. One of the experiments included the testing of both the annual and the biennial

White Flowering sweet clover and the annual and the biennial Yellow Flowering sweet clover when sown at the same time in the spring and without the use of a nurse crop in any instance. The results of duplicate tests show that the Hubam sweet clover produced an earlier crop but a lighter yield of hay per acre than the biennial White Flowering variety. Experiments conducted at Washington, D.C., and in Michigan seemed to correspond closely with our own, namely, that, when treated in exactly the same way, the White Flowering annual sweet clover will produce a crop of hay in a shorter length of time, but that the yield of hay produced by the biennial White Flowering sweet clover is about fifty per cent. greater than that of the annual in the same year that the seed was sown. The annual, of course, will die in the autumn and the biennial variety will survive the winter and furnish crops in the year following. It looks as if the annual White Flowering sweet clover may have a place for certain specific purposes in Ontario, but not equal to some of the extravagant claims made by some of those who are desirous of selling seed at a particularly high price.

Sunflowers as a Farm Crop.

In the spring of 1921 Circular No. 35 on "Sunflowers as a Farm Crop" was issued by this Department. Three varieties of sunflowers have been under test in the Field Husbandry Department in each of twenty-five years. The average for the whole period in tons of green crop per acre per annum has been 20.3 for the Black Giant, 16.6 for the Mammoth Russian, and 15.1 for the White Beauty. In average yield of seed per acre for twenty-two years, the results have been:—Black Giant 1,623 pounds, Mammoth Russian 1,435 pounds, and White Beauty 1,607 pounds. In each of two years sunflowers were placed in the silo and the sunflower silage was used for feeding to the farm cattle. It was eaten very well by the cattle but did not seem to be relished quite as well as the silage made from corn.

It is quite likely sunflowers will be used as a silage crop in some parts of Ontario, especially in those localities where corn cannot be grown satisfactorily owing to trouble from early and from late frosts particularly in the northern districts and in places of high altitude and of adverse soil conditions. It is interesting to note that in the tests made with different crops by our Entomological Department in Elgin County in the past season, in no instance were any of the plants of three different seedings of sunflowers infested with the European Corn Borer. In the United States, the sunflower has been infested by the European Corn Borer to only a very slight extent.

ANIMAL HUSBANDRY AND FARM DEPARTMENT.

The Farm.

The year 1921 will long be remembered as one of light grain crops over the greater part of Ontario, but fair yields were obtained from the College farm owing to the fact that the grain seeding was all finished in April, a record for the farm. The seed was in before the spring wet weather commenced, and, notwithstanding the fact that a later prolonged drouth followed by heavy storms

did considerable damage, yields were fairly satisfactory, oats averaging between fifty and sixty bushels per acre and barley and mixed grain from forty to fifty bushels.

The hay crop was only fair. Most of it was cut very early in order to prevent the seeding of white cockle which has long given trouble in meadows on the farm. This early cut hay was well cured and is excellent feed but does not go as far as the better matured crop.

The corn crop of forty-five acres was one of the heaviest ever produced on the farm. The yield was so great that all the silos were filled and refilled, and it was necessary to build a fifth silo 12 feet by 36 feet to hold the crop. It was so well matured when cut that next year's seed was selected from the standing crop. Corn for silage purposes is year after year proving the most valuable crop on the farm.

The root crop was not heavy but of good quality. The mangels were injured in early growth by a severe hail storm, and while they came on afterwards and reached a fair size they did not produce a big yield. The turnips were of good quality but only medium in size. They were sown on a twelve-acre strip that was a mass of twitch grass in the spring. By use of a stiff-tooth cultivator this piece of land was thoroughly cleaned by June 28th, the date the turnips were sown. Cleaning the land prevented early sowing but the quality of the turnips was all that could be desired.

Each year brings its pasture problems where so much stock is maintained on a small acreage. Fortunately, with rapid early growth of grass and the excellent aftermath from the early-cut clover fields, together with twenty acres of sweet clover, the stock came through the summer in fairly good condition. Sweet clover again proved its value as a summer pasturage for dairy cows, the twenty acres holding the entire dairy herd until the second growth was ready on the hay fields.

The farm is operated in sections and a four-year rotation practised. We are seriously considering changing to a three-year rotation, relying more and more on sweet clover for pasture and trying alfalfa for hay. Two difficulties always present themselves in operating the farm. One is to raise enough grain to get sufficient straw for bedding and the other is to arrange for sufficient pasture. Eventually more land will be needed.

The farm has gone into the winter in excellent condition. Never has it been more thoroughly fall plowed and cultivated. All plowing was finished, considerable ridging done and before the second plowing a great deal of cultivating was done with a stiff-tooth cultivator and tractor discs. A new tractor has helped out greatly with the work. The year's crop consisted of: 45 acres of corn, 18 acres of roots, 10 acres of winter wheat, 35 acres of barley, 32 acres of mixed barley and oats, 70 acres of oats, 115 acres of clover hay, 20 acres of sweet clover besides permanent pasture.

Farm Horses.

No additions were made to the farm horse stock during the year through purchase. Two Percheron colts were foaled, but one, prematurely born, only lived two days. There are now five colts coming on from the last three years' breeding. Some of the workers are getting old and will be replaced during the present winter. Investigation has been begun to show the cost of maintenance of farm work horses for the winter.

Beef Cattle.

The beef cattle herds are good. The farm is particularly strong in Shorthorns and Aberdeen Angus. The Hereford herd requires more building up. The sires are proving valuable breeders and the young stock coming on are certainly strengthening the herds.

In finished steers the College was never so well supplied for classroom work.

The steer-feeding experiment reported on last year is to be continued as soon as we can get suitable calves to carry on.

Investigational work is now in progress dealing with the cost of maintenance of beef cows over winter and also to ascertain the cost of maintenance of herd bulls. Fourth-year men are writing theses on these subjects.

Dairy Cattle.

The dairy herd was strengthened during the year by the addition of four Ayrshire females, three Jersey females, ten Holstein females and a Holstein herd sire. The dairy herd now consists of 48 head of Holsteins, 19 head of Ayrshires and 10 head of Jerseys. Production has been satisfactory. While we do not push for great records the mature cows in the Holstein herd averaged 15,230 pounds of milk for the year, some of them exceeding 18,000 pounds. The three herds are headed by three of the best bulls of their respective breeds. The new Holstein bull's four nearest dams average 34 lbs. of butter in a week, and he is a choice individual. The herd is in a fine position to go ahead now.

Experiments are under way on the cost and best methods of vealing calves, and data is being kept on the cost of producing milk and butter fat from the different cows, on the cost of maintenance of dry cows and the cost of raising heifers.

Two young bulls sold at the sale won in their classes at the Ontario Provincial Winter Fair, held at Guelph.

Sheep.

The sheep flocks at the College have been well maintained throughout the year. The lamb crop was large but losses were again rather heavy, due no doubt to the great amount of handling of the pregnant ewes by students in their judging work. The actual increase raised was just about 100 per cent. whereas the lamb crop dropped was almost 150 per cent. Facilities for exercising the ewes during the winter are not what they should be, and it is difficult to keep pregnant ewes from getting too fat. However, the sheep flocks are on a good basis. The Shropshire flock has been strengthened by the use of an outstanding imported ram, and the Leicester flock has been built up by the constant use of the best imported rams. Besides these breeding flocks we have excellent classroom stock of the following breeds:—Cotswolds, Lincolns, Hampshires, Oxfords, Dorsets, Southdowns and fat wethers.

The lamb experiment, explained in two previous reports, is again under way. Some valuable information is being collected on fattening lambs.

Investigational work on the cost of maintenance of breeding ewes is also being carried on, as well as in relative lamb and wool crops of the various breeds. This year 22 Shropshires averaged 7.4 lbs. of wool; 17 Leicesters averaged 7.1 lbs.; 6 Cotswolds averaged 9.6 lbs.; 4 Oxfords averaged 8.5 lbs.; 4 Dorsets averaged 5.19 lbs.; 4 Southdowns averaged 3.9 lbs.; and 4 Hampshires averaged 5.5 lbs.

Swine.

The swine were housed in the new piggery for the first time during the past year. With a few adjustments which experience proved necessary this piggery is an unqualified success. All classes of pigs have done well and the breeding herds of Yorkshires, Tamworths and Berkshires are in a very strong position. An effort is being successfully made to breed all three breeds according to the new bacon hog standards. Besides these breeds, Poland Chinas, Duroc Jerseys and Chester Whites are carried for class-room purposes.

Experimental work now under way includes an investigation into the cost of maintenance of brood sows with the effect of size of litter on this cost; a feeding test to show the comparative values of home grown feeds and tankage against Motherwell's feed and Purina Pig Chow; investigational work in the effect of breed on size of litters; and an experiment to determine the effect of ordinary salt (sodium chloride) on swine. The latter experiment is now in its second year as is the investigational work on size of litters. The first year's work on size of litters showed an average of 11.22 pigs per litter in 701 litters of Yorkshires, and 9.02 pigs per litter in 1,034 litters of Berkshires. This work is being carried on with all breeds this year. The experiment in feeding salt so far shows that very little is required by feeder pigs, those weighing 125 lbs. using at their own free will about .08 ounces daily, but that those allowed free access to salt do better than those getting no mineral after a rather prolonged period. Salt fed in excess to swine causes an unthrifty condition so that it is not advisable to force pigs to take salt in their rations.

Stock Sale.

Last year no College sale was held and the surplus stock was sold privately. This year a return to the auction system was made and, notwithstanding the fact that prices have dropped and demand has slackened, a satisfactory sale was made. The following is a summary of the sale:—

7 Shorthorns sold for	$2,965 00
4 Grade Herefords sold for	315 00
4 Fat cattle sold for	494 00
11 Dairy bull calves sold for	855 00
29 Lambs sold for	375 00
64 Pigs sold for	2,102 50
Total	$7,106 50

Buyers were present from all parts of the province and some from the United States. The 118 lots were sold in three hours. Bidding was brisk and prices, considering the times, good.

Class Work.

The lecture course was a thorough one. During the year Prof. Sackville took six months' special work at Iowa State College, Ames, Iowa, to specially fit him to handle the dairy herd. A team was trained as usual for the Chicago International Judging Competition where they stood second among 21 colleges, only 32 points behind the winners. Ontario had high man with a score of 891 out of possible thousand, and fifth man with a score of 876. The O.A.C. was second in horses, sheep and swine, eighth in beef cattle, and also furnished the high man and second man in beef cattle, the high man and seventh and

eighth man in swine and the tenth man in sheep. Besides judging and types and breeds we have emphasized commercial values, breeding, feeding, buying, selling, pedigrees and general live stock management. All those on the staff have co-operated to greatest possible extent to strengthen the course. The short course was well attended and interest was well maintained, and the fourth-year men in the agricultural option were brought back a week before College opened for a special trip to stock farms in Western Ontario. We wish to place on record our appreciation of the generous manner in which breeders have co-operated with us in our judging work.

POULTRY.

The work of the department this year has been exceptionally heavy. Never has there been so much interest shown, generally, in poultry production, nor has there been a year when the teaching, poultry extension, and the general management of the Department have been more difficult. More students have been given practical instruction, there has been more demand for outside demonstrations, and more chickens have been hatched and reared than in any previous year.

Poultry Extension.

To supply the demand for work in the field would require a large number of workers. It would appear that for a few years at least a poultry expert could be kept busy in every three or four counties, and possibly in every county. Demonstrations in culling hens have been given and general advice in poultry matters wherever possible, but not nearly all the requests have been met. More than one hundred and thirty culling demonstrations were given. There were between two and three thousand people present at these meetings. Large meetings are difficult to handle; or where one is trying to demonstrate the difference between a high and a low laying hen and then have the people try out the methods, a small meeting of twenty people is more desirable than a large number. There were about thirty thousand hens examined of which nearly one-third were culls.

There are now one hundred and eighty breeding stations in the various counties. These flocks are carefully culled each year. Two breeding stations were closed during the year. Six hundred and sixty Barred Rock males have been sent out to these stations.

Numerous meetings were held at local Poultry Associations and other gatherings.

Egg Production.

There were one thousand Plymouth Rock and White Leghorn pullets used in experimental work on the plant this year. These were maintained largely for studying dates of hatching in regard to the number of eggs produced, together with the problem of inheritance of egg production. The pullets were put in laying pens at an age of between six and seven months. All were trap-nested. The average number of eggs produced from the time they were placed in the pen for twelve consecutive months was a trifle over one hundred and

seventy nine eggs each. This is a higher average than in any previous year. Two birds of this number laid three hundred or more eggs each in twelve consecutive months.

Artificial Lighting.

For a number of years electric lights have been used experimentally on laying pullets. This year the light was turned on at 4.00 a.m. commencing November 1st and was discontinued in May. In other years there was some trouble with the birds moulting when the lights were discontinued, but this year this trouble was avoided, largely by using the light until such time as the daylight was equal to the morning artificial light.

The results each year indicate that at least twenty-five per cent. increased production may be expected during the short days. The general average production for the year does not show much increase of the birds in unlighted pens: or in other words, the increased production during winter is followed by a decreased number in the spring when eggs are at the lowest price.

Hatching and Rearing.

More chicks were hatched and reared this season than ever. The eggs hatched better and there was less mortality among the chicks, and, further, there were more students operating incubators; hence all these conditions produced a very large number of birds.

The labor and feeding problems were very difficult to handle.

There is a possibility that the increased hatch was partially due to careful feeding of tender green feed and a small amount of liver; at least we got good hatches from the very highest laying pens of pullets when so treated.

Breeding Work.

Some progress is made each year along the lines of isolation of individual hens that are not only good egg producers but are equally good breeders. This year we have found more hens with the above characters than in any previous year. There have also been located a number of males of good breeding records. The breeding work is now in such a condition that it should be possible to isolate several very good families, providing there is labor and feed provided to carry on.

To pedigree nine thousand chicks and keep all the records required is no small task.

BACTERIOLOGY.

A total of 4,202 cultures of legume bacteria for seed inoculation were prepared and sent out as follows:—

Sweet Clover, 1,501; Alfalfa, 1,363; Red Clover, 658; Peas, 375; Alsike, 208; Vetch, 38; Soy bean, 26; Sweet pea, 24; Beans, 9.

A total of 94 lactic starters and 13 Bulgaricus cultures were sent to creameries, cheese factories and other applicants.

A number of diseases and abnormal conditions of plants and animals were found in specimens submitted to us from various parts of the Province for examination.

One hundred and twelve specimens of poultry were received during the year for examination as to nature of illness or cause of death. Of these twelve per cent. were cases of advanced tuberculosis. These tubercular specimens came from the following counties; Lincoln, Bruce, Huron, Wellington, Lambton, Simcoe, Halton and York, thus indicating that this disease of poultry is still widely scattered over the Province and, as indicated by the letters accompanying the specimens, is causing heavy losses in the flocks where it is prevalent.

INVESTIGATIONAL.

A Bacteriological Analysis and Cultural Test of "Nitro Bacter Soil Vaccine."

"Nitro Bacter Soil Vaccine" is a liquid preparation recently put upon the market in U.S.A. and Canada and widely advertised as giving wonderfully increased crop returns when applied to the soil on which the crops are grown. It is claimed by its manufacturers to be a culture of bacteria, which, on addition to the soil, "attach themselves to the plant roots and draw nitrates and phosphates from the air and soil and act in place of fertilizers."

As we received in the early part of the year many letters of enquiry regarding this preparation we secured from the Toronto branch of the firm that manufactures it a gallon sample for analysis and test. A portion of this sample was applied, according to directions, to various crops including corn, tomatoes, cabbage, cauliflower and strawberries and a portion was used for bacterial analysis.

The analysis included bacterial counts made on various agar media and cultural tests in various solutions for production of ammonia nitrates and nitrates and for nitrogen fixation.

Coincident with the "soil vaccine" test we ran for purposes of comparison similar tests with a soil suspension made by adding one part of garden soil to two parts of sterile water, shaking and allowing the soil to settle and then using the supernatant liquid for cultural purposes.

The results of these comparative tests showed that the decomposition bacteria were thirty-two times and the nitrogen fixing bacteria were twenty-seven hundred times more numerous in one gram of ordinary garden soil than in 1 c.c. of the "soil vaccine."

The ammonification and nitrification tests showed a much more rapid ammonification, nitrate and nitrate formation by the garden soil than by the "soil vaccine" when comparisons were made on the basis of one gram of soil to 1 c.c. of "soil vaccine."

If, as is claimed, the virtue of the soil vaccine depends on its bacterial content, and if the sample tested by us is an average sample, then the above findings indicate that the "soil vaccine" is not all that it is claimed to be.

In the crop tests, corn, cabbage, cauliflower, tomatoes and strawberries in rows twenty feet long were treated with the vaccine and four feet distant were similar rows left untreated for comparison. Observations on development were made from time to time until the crops were harvested, but at no time was there seen to be any superiority of the treated crops over the untreated.

Conclusions.

A sample of "Nitro Bacter Soil Vaccine" tested was of no value for increasing crop production.

When the report of our analysis and test was forwarded to the manufacturers they acknowledged the accuracy of the findings but claimed that the sample which they had sent for analysis had unfortunately not been a representative sample. So far, however, the department has not received further samples for testing.

Contagious Abortion of Cattle.

As time permitted the routine work in connection with the Agglutination Test for contagious abortion of cattle was continued in two herds.

Analysis and Test of Rat Virus.

At the request of the Hon. Manning Doherty, Minister of Agriculture, the department obtained for experimental purposes a sample of the "Alexander Rat Killer, a Pathological Virus for destroying Rats, Mice, Gophers and other Rodents," prepared by the Alexander Biological Laboratories, Kansas City, U.S.A.

The virus proved to be a culture of a gram negative, non-spore forming, actively motile bacillus, identity not yet determined. The organism grows readily on standard beef extract agar, blood serum and broth at 37° C.

A number of barn rats were caught alive, without injury, and kept in cages for feeding experiments with the virus. Sub-cultures of the original culture were made and the original culture was then mixed with milk and bread, according to directions, and fed to two young rats that were about two-thirds grown. They ate all the inoculated material and were not given any other food for two days. Fresh bread and milk was then given them. This they ate readily, and though kept under observation for six days longer they failed to show any ill effects from having ingested the virus.

Milk of Dairy School Patrons.

Tests made of the sanitary quality of the milk delivered by the seven Dairy School patrons during the summer months indicate that it would not be satisfactory for condensing and powdering purposes, and that considerable improvement will have to be made before it can be classed as satisfactory for purposes such as these. Lack of prompt and thorough cooling is largely responsible for the large numbers of bacteria found; milk temperatures ranging from 66° to 76° when delivered, were found on two days during July and August when the minimum morning atmospheric temperatures were 54° and 63° respectively, outside.

Payment on the basis of sanitary quality promptly and usually effectively directs the attention of milk producers to matters such as dirt in milk, bacterial content, unsterile utensils, efficient cooling, etc., which they are apt to neglect to a greater or less extent when payment on a fat basis only obtains. Certain large milk purchasing concerns in the U.S.A. now paying cash premiums per 100 lbs. of milk based on the number of bacteria found per cubic centimeter.

Pasteurization and Neutralization of Cream for Buttermaking.

Further co-operative experiments along this line have again been carried on with the Dairy department during the summer but nothing particularly striking from a bacteriological point of view has developed. A somewhat greater germicidal efficiency was obtained when cream, both neutralized and not neutralized, was

pasteurized at 170° F. for ten minutes, compared with pasteurization at 145° for thirty minutes: the latter temperature has now been practically discarded by buttermakers owing to the fact that butter made from such cream will show a reaction (blue coloration) when tested by the Storch test.

Whey Cream and Whey Cream Butter.

Several tests of whey cream and whey cream butter showed the presence of large numbers of micro-organisms in these products, and the statement that "the cheese-making process removes about 95% of all the bacteria in the milk" has not been upheld. In view of this fact buttermakers are well advised to efficiently pasteurize all whey cream being manufactured into butter, and to hold whey cream temperatures down as low as possible before pasteurization to check fermentations which will otherwise occur.

Micro-organisms in Creamery Butter.

Interest by creamerymen in the microbial content of creamery butter, particularly that made from pasteurized cream, has now developed to such an extent that it was found necessary to employ a man to give a large part of his time to this work.

Five hundred and seventy-four samples of butter were received from the grading station during the summer of 1921, compared with 315 in 1920. These 574 samples represented butter made in 56 creameries, but as thirteen of these sent three samples only or fewer, we have 513 samples from forty-three creameries, an average of twelve samples per creamery or one every ten days. Nine creameries sent eighteen samples each or one every week of the eighteen weeks during which analyses were made.

Increasing Interest in the Science of Bacteriology.

The increasing interest of the general public, particularly the farming community, milk producers, dairymen and health authorities in the science of bacteriology is an encouraging sign of the times.

Bacteriological investigation in connection with soil, water, foods, human, animal and plant diseases has solved many problems relating to the general health and welfare of the community, farm animals, crop production and food preservation. New problems are continually presenting themselves for consideration. Information is being sought on an increasing variety of problems, but time for the prosecution of investigational studies is exceedingly limited owing to the large classes which are at present attending the College, both winter and summer, and to the changes in the courses which have resulted in practically all the time being given up to teaching.

DAIRYING.

A start has been made on the new building for this department which has been very much needed for some years. With a modern building, and new, as well as enlarged equipment, it will be possible to give better service to students and to the dairying industry of the Province. The new quarters should be ready the latter part of 1922 or early in 1923. It is intended to add three new lines of dairy teaching and investigation, viz.: market milk, ice cream, condensed and powdered

milks. Many inquiries come from those who are interested in these branches of dairying.

Cheddar Cheese.

Effect of Increasing the Acidity of Milk when Using Pepsin as a Coagulating Agent.

The general conclusion is that neither pepsin nor mixed rennet and pepsin offer any advantages over rennet as a coagulating agent in the manufacture of Cheddar cheese. The pepsin requires more acidity of the milk, and tends to produce greater losses, consequently lower yields, and cheese of poorer quality, as compared with rennet.

Effect of reducing Acidity of Over-ripe Milk by the Use of Lime and Special Alkiline Powder.

In other years we have found it an advantage to reduce the acidity of over-ripe milk before adding the rennet. This year, the highest acid milk lots scored higher —in fact, the highest scoring group of cheese in all our experiments during 1921, was that made from milk which had an average of .22 per cent. acid at the time of adding the rennet. This group scored an average of 94.25 out of 100. The scoring of practically all the experimental cheese was done by Mr. Frank Herns, Chief Dairy Instructor for Western Ontario.

The effects of acid on milk used in the manufacture of Cheddar cheese are not well understood. In some seasons the milk appears to require more acid than in other years. The season of 1921 appears to have been one, during which high-acid-milk has given better results than did the sweeter milk. It is possible that the ordinary methods of determining milk-acidity are not sufficiently accurate and in this may be the explanation of varying results.

Buttermaking Experiments, 1921.

A series of experiments was made between the dates of April 27th and May 19th with the object of determining the following two factors:

(*a*) Pasteurization and neutralization *vs.* neutralizing raw cream as to flavor of butter when fresh, and also after holding in cold storage as to keeping quality.

(*b*) To determine the relative per cent. evaporation during pasteurization with covers (lids) of pasteurizers open and closed during the process.

Summary of Observations.

(*a*)

1. A pasteurization temperature of 170° for ten minutes is to be recommended, rather than 145° for 30 minutes.

2. Partially neutralizing the excess acid in cream for buttermaking in addition to a pasteurization temperature of 170° for ten minutes is recommended.

3. There is evidence to show that neutralized butter is less likely to develop a fishy flavor while in cold storage, and especially when taken out of cold storage and kept at ordinary room temperature, as would be the case in butter held in a store exposed for sale, or in a home for future use.

(*b*)

1. There are no advantages to be gained by the practice of neutralizing raw cream without pasteurization.

2. The average per cent. loss in buttermilk was higher in the pasteurized and neutralized churnings than in the raw and neutralized.

3. Neutralization of raw cream causes a thickening of the cream in the vat. It is difficult to mix the neutralizer uniformly and the neutralizing action is not so rapid as where cream is heated.

4. As far as can be ascertained at present, there is no loss of any constituent of the cream other than that of water due to evaporation in the pasteurization process at the ordinary temperature recommended.

5. The average difference of losses in per cent. of evaporation with covers of pasteurizers closed and open was 8.71 in favor of the former.

Composition, Acidity, and Bacterial Content of Milk Supplied Dairy Department, O.A.C., 1921.

During the summer an experiment was carried out with the object of ascertaining whether or not the milk being received at the Dairy department was suitable for powdering and condensing purposes.

Conclusions—In view of the fact that milk for condensing and powdering must be free from heavy bacterial contamination, the presence of insoluble dirt, and high acidity, it is evident that the milk, as delivered by the patrons to the Dairy department during the past summer, was unfit for these purposes, and that spoilage accompanied by financial loss would result if it were manufactured into condensed or powdered milk.

Whey Butter.

During the summer of 1921 a study of whey butter was made jointly by the Dairy and Bacteriological Departments of the College, and co-operatively with the Wisconsin Experiment Station at Madison. Altogether eleven sets of experiments were conducted, but bacteriological tests were made on but two lots—May 13th and 20th.

Conclusions:—1. A very fair quality of butter can be made from whey cream, which compares favorably when fresh, and when held in cold storage, with butter made from similar cream that has been separated from whole milk. Because of the small quantities of milk and whey we worked with, the quality of the butter was not so good as if larger volumes had been handled.

2. The difference in bacterial content between milk cream and whey cream were not constant. The whey cream butters were lower in bacterial count than the butters made from milk cream. The yeast and mould counts were not consistent, though the tendency was for higher counts in the milk creams and butters as compared with the whey lots.

3. It pays to separate the whey at a cheese factory where there are 5,000 to 6,000 pounds or more of milk received daily throughout the summer season.

4. The keeping quality of whey cream butter in cold storage appears equal to that made from milk cream. The average of the scores for texture of the lots made from milk cream as 14.37; and of the whey cream lots 14.35, indicating very little difference in this respect.

Cooling Cream After Separating *vs.* Not Cooling.

In order to determine the effect of not cooling cream after separating and of not stirring the cream while the can of cream was being collected, one or two cans

had cream added after cooling: the cream was stirred at each addition of fresh cream, and from time to time during the time of collecting which was from three to five days. The other can had the fresh cream added each day without cooling and without stirring. The temperature to which each lot of cream was cooled, averaged 47.1° and 54.2° respectively. In one test the cooled and stirred can of cream was cooled to a lower temperature than the one not stirred.

The average total scores, both at the end of one week and after holding one month, were in favor of the lots of butter made from cream which was cooled immediately after separating and which were stirred at each time of adding fresh cream. The lots made from cream which had the fresh cream added immediately after separating and without stirring, but which were kept moderately cold, scored about one point less for flavor when fresh, and a point and one-half less at the end of one month. The practical lesson is, cool the cream at once after separating and before mixing with cream from previous separations, as by so doing the quality of the butter is improved, both when fresh and if held for some time before it is consumed.

Effect of Neutralizing Sour Cream for Making Cream Cheese.

When magnesia lime was added to cream containing over .25 per cent. acid, or in which the casein has been precipitated, the results were not satisfactory, as proper rennet action does not take place.

HORTICULTURE.

Attention is directed to the results herein reported covering co-operative experiments in summer pruning of apple trees, investigations into the fruiting habit of apple trees and the improvement of fruits and vegetables by breeding. These results are of great interest and importance to commercial growers of fruits and vegetables.

Summer Pruning of Young Apple Trees.

As results of experiments begun in 1914 and carried on with the co-operation of fruit growers there has now been obtained a definite result on this disputed point. Summer pruning has been and still is widely recommended by some as a means of bringing young fruit trees into bearing at an earlier age. This matter has been thoroughly tested with the Northern Spy variety, which is one of the most valuable commercial varieties grown in the Province and one which is notoriously late in bearing. The experiments were located as follows:

Thomas Coyte, Port Hope, Durham, 20 trees.
J. W. Bamsay, Newcastle, Durham, 16 trees.
Milton McAllister, Paris, Brant, 20 trees.
Thomas Blayney, Renton, Norfolk, 16 trees.

The trees in each orchard were uniform in size at the beginning of the experiment.

The results on growth and fruitfulness are summarized in the following table:

Locality	Variety	No. of Trees Under Test	Average Circumstances			Fruitfulness 1921
			Summer Pruned	Dormant Pruned	Unpruned	
Port Hope	Spy	20	20.15	22.65	.....	More apples on dormant pruned tees.
Newcastle	Spy	16	14.65	.....	16.15	A few apples on unpruned trees. None on summer pruned.
Paris	Spy	20	15.31	.....	16.24	No fruit on either.
Renton	Spy	16	11.50	.....	15.13	No fruit on summer pruned. A fair crop on unpruned.

Practical recommendations based on these results are as follows:

(1) Summer pruning does not advance the bearing age.

(2) Summer pruned trees do not make as much growth as dormant pruned trees.

(3) Dormant trees pruned according to the methods in common use do not grow as rapidly or come into bearing as early as trees with little or no pruning, either dormant or summer.

(4) Unpruned trees have made a larger growth and are now bearing more heavily than either summer pruned or dormant pruned trees.

It is recommended that young apple trees at the time of planting, and for a year or two afterward, be given only enough pruning to form a good framework of branches, after which they should be pruned as little as possible until they come into bearing.

The method of pruning with both dormant pruned and summer pruned trees was to thin out small branches in order to relieve crowding and to admit sunlight to all parts of the tree. Dormant pruning was done before growth began in the spring, summer pruning in the latter part of August, after growth had finished for the year.

These experiments will be continued in order to determine whether summer pruning will have any effect on the quantity or quality of fruit after the trees begin bearing.

RESEARCH.

Biennial Fruiting.

A special study has been made of biennial bearing in apple trees and has demonstrated that the habit can be corrected. Trees of the Wealthy variety which formerly bore in alternate years are now bearing full crops annually. The result of the investigation is briefly summarized as follows:

(1) Fruit bud formation in biennial bearing trees is confined entirely to the "off" year.

(2) Alternate bearing is caused by the development of too many fruit buds in the "off" year.

(3) No treatment can be given in the "on" year which will reduce the number of fruit buds formed in the "off" year. Thinning of fruit has no effect on the development of fruit buds for the succeeding year.

(4) The period of fruit bud formation is very short—not longer than four to nine days—and is also completed much earlier in the season than we formerly thought.

(5) Fruit buds on the apple are borne usually on short growths called "spurs". In the case of an "off" year tree we find that fruit spur development is completed by the time the "on" year tree of the same variety is in full bloom. The date of completion of growth falls ordinarily between the 20th and 30th of May.

(6) Regular or annual bearing can be secured by preventing the formation of fruit buds in such large numbers in the "off" year. Prevention consists in stimulating the vegetative growth of the tree so that a certain number of spurs which would normally develop fruit buds are forced into vegetative growth instead.

(7) Biennial bearing trees frequently produce blossoms on 80% to 90% or more of their spurs. 30% to 40% of these blooming annually would be quite sufficient to insure full crops.

(8) The necessary stimulus can be given by moderate heading back of small branches throughout the top of the tree. This is only effective in the early spring of the "off" year. A light application of nitrate of soda as a fertilizer early in the spring of the "off" year produces a similar result. A more desirable orchard method would perhaps be to combine both practices.

(9) The studies suggest that in order to get full crops annually it is necessary to stimulate vegetative growth rather more than is customary in Ontario practice at present.

(10) After regular bearing is established early spring growth conditions become very important, as any unfavorable condition may check growth unduly and throw the tree again into biennial bearing by allowing the development of too many fruit buds.

(11) Attention is called to the importance of thorough soil drainage for purposes of raising the soil temperature and promoting aeration in early spring so that vigorous root growth may begin as early as possible.

(12) Attention is called to the fact (established by other workers) that higher soil temperatures occur under sod in early spring. It is suggested that the sod mulch system of orchard management may prove desirable, on further investigation. It is already known to be an important safeguard against winter killing.

Much of the information outlined above is new and forms a distinct and valuable contribution to our knowledge of fruit bearing. It is considered that the points outlined above are definitely established and it remains now to demonstrate the same in orchard practice under commercial conditions, working in co-operation with growers.

Hardy Stocks.

It is a matter of common knowledge that fruit trees are propagated by budding or grafting, and that the roots upon which apples, pears, plums and cherries are propagated are imported by Canadian nurserymen from France. The occasional severe winters of our climate and the exceptionally severe winter of 1917-18 have demonstrated very plainly the unsuitability of French stocks for our vigorous climate. *It will not be possible to develop fruit growing on safe lines in this Province until we have trees propagated on hardier roots.* It would appear that we

shall eventually require to establish at isolated points, plantations of certain varieties for the production of seed from which to grow the seedling roots used by nurserymen. The first problem, however, is to determine the best varieties for the purpose.

Plant Breeding.

The department is carrying on the following lines of effort in plant improvement and aims to produce:—

1. A long-keeping and good shipping, red winter apple of high quality.
2. Hardy varieties of blight resistant pears.
3. Improved commercial strawberries.
4. High quality strawberries for home use.
5. Improved rhubarb for market, for forcing and for the home garden.
6. Improved asparagus.
7. Head lettuce for hot weather.
8. Improved strains of onions.
9. Improved strains of early cabbage.
10. Disease resistant celery.
11. Disease resistant garden beans.
12. Improved greenhouse lettuce.

Extension.

Twenty-six places were visited by an official, on request, for the purpose of giving advice in the laying out of school grounds, community grounds, and town parks.

Plans were furnished for twenty-eight school grounds, nineteen farm home grounds, and seventeen community parks, memorial parks, etc.

ENTOMOLOGICAL.

Insects of the Season.

1. European Corn Borer. (*Pyrausta nubilalis*). As soon as the discovery of this new and very destructive insect was made late in the summer of 1920, a study of its habits was begun and preparations made for a very careful investigation of its life history the next year. The Department of Agriculture voted a sum of $2,000 to cover the expenses of the investigation and other work that might be necessary. Headquarters were established a few miles from Port Stanley, in about the centre of the worst infested area. A great mass of data on the insect's life history and habits was accumulated and many valuable control experiments given a preliminary trial. Although it will be necessary to continue the investigation next year, we already have strong hopes that the way to ultimate and successful control is beginning to open up as a result of the work done by our staff, and by the Dominion Entomological Branch.

In addition to the life history and control studies we have taken as large a share, as we felt we were justified in taking, of the scouting work to discover how far the insect has spread throughout the province.

The results of these studies on the European Corn Borer are now being put into a bulletin which it is hoped will be ready for distribution early in the spring.

2. Blackberry Leaf-Miner. (*Metallus bethunei*). This insect was not nearly so abundant this year as it had been during the previous four or five years, the difference evidently being due to the great number of parasites in the late summer and fall of 1920. In that year it had been shown that adults would not lay eggs upon leaves covered with hydrated lime; hence it was felt that here at least we had a simple and inexpensive clue to control. However, on testing the method carefully we were greatly surprised to find that we were faced by two dilemmas:—first, to keep the leaves, including the new leaves that were constantly forming after the flies began to emerge, continuously covered with the hydrated lime, and second, to prevent burning if we did thus keep them covered. After testing many ways of applying the hydrated lime and several stickers or adhesives with it, it was finally decided that there were too many difficulties in the way of this proposed method of control to make it practicable. Hence the control of this most baffling insect still remains unsolved.

3. Peach Tree Borer. (*Sanninoidea exitiosa*). During the last two or three years some investigators in the United States have applied paradichlorobenzine crystals in a ring in the soil a little distance away from the trunk of the tree to kill the borers. This has worked well in the United States with the older trees but has injured some of the younger trees. This new control method was tested by us this year on a number of one, four and seven or eight year old trees. The full results will not be known until next spring and even then the experiments will have to be repeated before we shall be able to feel sure that the method can be recommended.

Corrosive sublimate solution (1 to 1,000) was also tested in a preliminary way for the same insect. This was poured around the trunk of the tree at the ground, using about a pint to a tree. Two applications, one about July 1st and the other about August 1st were required. Here again the tests must be repeated for conclusive results.

At the same time that these experiments were conducted a study was being made of the life history of the borer and considerable data obtained.

4. Green Bug of the Apple and Pear. (*Lygus communis*). In 1920 this leaf bug was first discovered in Ontario as an apple and pear pest in two orchards near Newcastle, where it had almost ruined the entire pear crop and had injured a high percentage of the apples. Hence it was decided to try control experiments this year. The Dominion Entomological Branch, having become interested in the problem, offered to co-operate and the offer was accepted. In order that the orchards might serve for a test of various spray mixtures for the control of other insects and diseases it was decided to give them the regular three sprayings. These will be mentioned below.

Careful watch was kept for the first appearance of the Green Bug nymphs, and as soon as it was believed they had all hatched, which happened to coincide fairly closely with the fall of the pear blossoms, the trees were heavily sprayed at high pressure, 225 lbs., with nicotine sulphate 40% at the strength of 1 pint to 100 gallons of the ordinary spray material being used for the other troubles. Part of the orchard was also dusted with nicotine sulphate and sulphur.

The results of the spraying, wherever done immediately after the blossoms fell, were entirely satisfactory; but where postponed a few days were only partially

so. The dusting, however, was not nearly so successful, and many pear trees thus treated had nearly all their fruit so badly deformed as to be culls. The dust, moreover, proved altogether too costly for commercial purposes.

5. Spraying and Dusting Tests. As mentioned above, the orchards where the Green Bug was working were used for spray and dust tests. To these part of a third orchard was added.

The dusts used were (a) sulphur 90% and arsenate of lead 10%, (b) copper sulphate 10%, calcium arsenate 5% and hydrated lime 85%. The liquids tested were (a) lime sulphur 1 gallon to 40 gallons of water, 1 lb. calcium arsenate and 3 lbs. hydrated lime, (b) Bordeaux mixture, 3 lbs. copper sulphate, 6 lbs. hydrated lime and 40 gals. water, to which was added 1 lb. calcium arsenate. Only three applications were given in each case. In one block the Bordeaux mixture was used for the first two applications and lime sulphur for the last to prevent russeting. The weather was moist a good deal of the time but the applications were applied at the right time as determined by years of experience.

The results showed that either Bordeaux or lime sulphur gave excellent control both of biting insects and apple scab. The same good results were also obtained where Bordeaux was used for the first two sprays and lime sulphur for the third. These results include such susceptible varieties as McIntosh and Stark, Neither dust proved satisfactory in the control of scab, but the sulphur and arsenate of lead was better than the copper sulphate, calcium arsenate and hydrated lime. Stark trees treated with either dust had over 75% of scab. McIntosh were also very scabby running as high as 90% where the Bordeaux dust was used and 76% where the sulphur arsenate of lead dust was used. This demonstrated clearly that no matter how well timed and how carefully done, dusting will not in a wet season control apple scab so well as liquid sprays, at least where the same number of applications are given. The dusting was done late in the evening or early in the morning or directly after a light shower to give it a better chance to adhere to the foliage and fruit.

6. Brown Rot of Cherries. Experiments on the control of this disease which we had begun last year were continued this year. These experiments though very encouraging will require another year at least before recommendation can be based on them.

7. Canker Worms. From various parts of the province came requests to visit districts where canker worms were very abundant. This so far as time permitted was done and information on control given in all cases.

8. Nursery Inspection and Fumigation. The inspection of nurseries was continued as usual. It is gratifying to find that we are able to keep our nurseries almost entirely free from San José scale, the inspectors sometimes working for several weeks before finding a single specimen.

The fumigation of nursery stock has been rigidly enforced.

9. Orchard Inspection. There has been little change in this work the last few years. Peach Yellows and Little Peach are being kept under control well, this year the total number of diseased trees removed in the Niagara district being 741; last year it was almost the same.

CHEMISTRY.

Correspondence and Routine Analyses.

Chemistry is so closely allied to many of the industries using agricultural products, that the department is frequently called upon to address their conventions and to advise them in their operations. Farmers, too, send in a great variety of materials for examination, soils, fertilizers, domestic water, and feeds, with a very miscellaneous lot of materials ranging from honey and maple syrup to lightning rod materials, and poisons. So much work of this kind has been sent in that it has been impossible to look after it all. Three analysts devoting all their time to analytic work could not keep up with the demand. Where the problem was of a purely commercial nature, the correspondent has been referred to a commercial chemist.

Soils and Fertilizers. There is too much work entailed in the analysis of a sample of soil to make a full analysis of the hundreds of samples received, but a careful examination is made for available lime and for humus, and, this together with the information gained from the correspondent regarding the drainage, previous cropping and manuring, forms the basis of the reply.

Feeds. The revision of the Feeding Stuffs Act has resulted in millers sending a very large number of samples of shorts and bran for analysis. The only results of value to the department obtained from such analysis was to learn to what extent the closer milling of to-day was influencing the composition of these feeds. Most of these samples were passed on to the commercial chemists. Enough samples were analyzed here to prove that the bran and shorts as now manufactured contain more protein and fibre than they did a few years ago. The miller wants all the flour he can get out of the wheat and is using improved machinery for cleaning the bran. The grinding of weed seeds and putting them in the shorts is still a live problem, but there is evidence of more care being taken to keep out the poisonous seeds.

The Dominion Canners Limited, have sent samples of silage made from some of their waste products. From the condition in which we received these materials it is evident that if the waste products are put into the silo when fresh they can be preserved in good condition for feed. Analysis of silage made from corn husks, pea vine, and tomato seeds and peelings show that they have a fair value and that preserved in this way these waste products may be used throughout the winter months instead of allowing them to decay.

Domestic Water. The usual number of samples of water have been analyzed and, as usual, a very large proportion of these have to be condemned as unsafe for domestic purposes. Many farmers are now drilling in the bottom of old wells to get a more abundant supply of water. In some cases they have failed to protect the new source of supply from the contamination of the old well. In some instances they have tapped springs that are heavily charged with soluble salts, such as epsom salts, rendering the water unfit for use.

Wheat and Flour. There is evidence that the miller is realizing that the old methods of judging the quality of flour by doughing up small portions and by "slicking" it does not tell the full story, and that his work must be more fully controlled. The baker, too, is beginning to realize that he can purchase flour on a definite basis and can have the flour tested out to prove that he is, or is not, getting the quality of flour he purchased.

The usual study of the grades of wheat from the western provinces shows that the quality of the flour they will produce is slightly better than that of last year. The wheat kernel is thinner and consequently more glutinous. The flour is of good color, the absorption is a little better than last year and the fermentation is more even; although the standard grades of wheat of the 1921 crop will give good results when turned into bread.

There is, however, a large amount of sprouted wheat. The sprouting is naturally a malting process and flour made from such wheat may, or may not, bake well, depending upon how badly it was sprouted. A certain amount of the sprouted wheat mixed with the Standard grades increases the expansion and really improves the flour, but the introduction of too much gives the dough and bread that sticky feel common to the products of badly sprouted wheat. As the highest grade of sprouted wheat is No. 3 Northern, rejected, it is evident that much of it may be used to cheapen the wheat stream to the rolls, but the results will not all be satisfactory, as such wheat is not of an even quality.

Forty-three samples of spring wheats and eighty-seven samples of winter wheats, grown on the experimental plots have been milled and baked. The object of this work is to correlate the milling and baking qualities of the wheats with the yield per acre of the varieties and hydrids under experimentation.

Insecticides and Fungicides. A number of samples of these materials have been analyzed. The most interesting samples were one of calcium arsenate and one of lead arsenate made in Canada by the Deloro Smelting and Refining Company of Deloro, Ontario. These are the first materials of this kind made in Canada that have been put on the home market. Arsenis is an element that has caused a great deal of trouble in the smelting of Ontario ores, particularly the silver ore, and it is satisfactory to know that this troublesome by-product is being put into a saleable form. The analyses show the product to be equal in value to the similar standard products on the market.

Milk and Milk Products. With the increased interest and development of the dairy industry in the Province, it has been deemed advisable that one member of the department should devote his whole time to this subject. As Mr. Gibson has taught dairy chemistry for the past few years and taught dairying in Great Britain previous to coming to this country, he was selected for this work. During the summer, in company with Mr. Herns, he visited a number of creameries, cheese factories, and milk powder plants of the province with the idea of gathering first hand impressions of the problems requiring immediate investigation. Some work on problems has been started.

There is a growing demand on the part of dairymen for butter wrappers printed in several colors, red, brown, yellow and blue particularly. Recently we were called upon to examine some of these papers which were discoloring butter. It appears that in the past dairymen and others have been content to test the fastness of the colors by allowing the papers to lie for some time in a salt solution. This treatment did not affect the colors under examination, but when one of the fats, forming a part of the butter, was left in contact with the paper for a few days the red color dissolved, forming a smeary paper which of course destroyed the appearance of the butter. The manufacturers of printing inks state that it is impossible to guarantee inks as being undisturbed by the action of butter owing to the variation in shipments of colors from the color manufacturers. The standard blue inks used in printing butter wrappers are the most reliable, and it is recommended that where printed butter wrappers are

used only this variety of ink be adopted. The proper and safe way to avoid trouble from printing inks is to wrap the butter in an unprinted wrapper and pack in a printed carton. This, however, entails a small additional expense.

Several samples of cream and butter of poor keeping quality have been sent into the department for analysis. Most of the troubles with these materials can be traced to contamination in production from the time of milking. The inferior samples of butter are often caused through the manufacture from overripe or stale cream. With the increased use of neutralizers there is the possibility of the dairymen accepting cream for buttermaking which formerly would have been considered totally unfit for such a purpose. With cream that has developed such age and acidity as to necessitate the so-called process of "neutralization" in order to manufacture into butter, there is always a probability that undesirable decomposition may have set in which cannot be remedied either by sterilization or any chemical treatment.

Reports from the Central Grading Station, Toronto, indicate that the Modified Storch Test as recommended by this department, for detecting butter made from pasteurized cream proved satisfactory during the past season.

In order to facilitate investigation work and to accomplish the extra analytical work which will result from the new Dairy Standards Act it has become necessary that modern apparatus such as the Mojonnier Milk Tester be purchased immediately.

Soil Survey. Demonstration plots in connection with soil survey are attracting a great deal of attention. The second crop has been taken off the Norfolk County plot, and the coming season all ranges will be under the experimental crops. There have been two crops of potatoes, one of wheat, one of peas, and one of clover. Interesting results have been obtained, but naturally any definite conclusion cannot be reached as yet.

At Welland the past season was spent in draining, levelling, and cultivating the plot. A small barn was built for storage purposes. The rotation of crops to be followed on this clay soil is one adapted to the needs of the district. The experiments are planned to bring out the characteristic plant-food needs and lime requirements of this particular type of soil, and also the cultural methods that will give the best results.

BOTANY.

Weeds.

Analysis of the correspondence during the past twelve months indicates that the following weeds have attracted most attention this year:—field pepper grass, which during the past year has been largely spread through the province as an impurity in clover seed; field bindweed, finger or crab grass which was extremely troublesome this year in lawns, tennis courts and golf greens; poison ivy, troublesome around summer homes; twitch grass, perennial sow thistle and wild mustard.

Plant Diseases.

This summer smuts and rusts of grain were very prevalent and in some counties caused the farmers very severe losses. Oat smut was especially de-

structive. In some fields examined by the writer over fifteen per cent. of the crop was destroyed by this disease. Leaf rust of oats also caused much damage in parts of the province. Some of the Agricultural Representatives reported fields in which the crop was a total failure, largely due to the severity of this disease. Apple scab was bad especially in the eastern apple-growing sections of the Province. The efficiency of thorough spraying for the control of apple scab was demonstrated again this year, as in well-sprayed orchards from eighty to ninety-five per cent. of the fruit was free from scab.

Other diseases prevalent this year were plum pockets, corn smut, stem blight of asters and strawberry leaf scorch.

Strawberry Troubles in 1920.

This spring many strawberry growers in the Province reported that a large percentage of their plants had died during the winter, or that the plants had started into growth but failed to set fruit. They requested that an investigation be made to ascertain the cause of the trouble. Two inspection trips were made with this object in view,—one trip along the Ontario Lake Shore from Bronte to St. Catharines, and the other through a portion of the Grand River Valley.

In the Grand River Valley the trouble was chiefly due to winter injury and late frosts. In the Ontario Lake Shore District there was some winter killing, but most of the trouble was due to the fungus disease known as leaf scorch. The plants in this district were badly affected by this disease in 1919 and went into the winter in such a weakened condition that they failed to survive the cold of the winter and early spring. The varieties which were most injured by the leaf scorch were Glen Mary, William Belt and Ruby. Varieties which appeared to be most resistant to leaf scorch were Williams, Parsons Beauty, Vanoise, Portia and Senator Dunlop.

Purity Tests of Commercial Seeds.

Purity tests according to the standards designated by the "Dominion Seed Control Act" were made of eighty samples of clover and timothy seed. Out of 22 samples of alsike seed, four grades No. 1, five No. 2, seven No. 3 and six were disqualified. Out of 22 samples of red clover seed three grades No. 1, three No. 2, four No. 3 and twelve were disqualified. Out of 21 samples of sweet clover seed, nine graded No. 1, six No. 2, two No. 3 and four were disqualified. Out of 13 samples of timothy seed seven graded No. 1, one No. 2, three No. 3 and two were disqualified. Only two samples of alfalfa seed were submitted for purity test, one graded No. 1 and the other was disqualified. In addition to the above tests of clover and grass seeds according to the Seed Control Act, purity tests were made of a large number of samples of seed grain, lawn grass seeds and of chop and other food stuffs.

Investigational Work.

During the past year the following research work has been carried on.

Co-operative experiments in weed eradication.

Potato disease investigations in co-operation with Agricultural Representatives.

Plot experiments with potato diseases.

Spraying experiments in the control of late blight of celery.

Experiments to test the "Dry Formaldehyde Treatment" for the prevention of oat smut.

Investigation of the causes and means of control of winter blight or streak of tomatoes.

Dusting experiments for the prevention of rust of snapdragons.

Experiments in the control of Pod Spot or Anthracnose of Beans.

Experiments in the prevention of Rhizoctonia or Black Scurf of potatoes.

Investigation regarding the humidity of commercial greenhouses and its effect upon the prevalence of diseases of greenhouse plants.

Co-operative Experiments in Weed Eradication.

During the past ten years (1911-1921) co-operative experiments in weed eradication have been carried on by this Department. Over eighty farmers have carried on satisfactory experiments. The weeds experimented with were Perennial Sow Thistle, Twitch Grass, Bladder Campion or Cow Bell, Wild Mustard, Ox-eye Daisy, Field Bindweed, Wild Oats and Chess. Those who took part in these experiments profited by the experience. In nearly every instance they cleaned the field experimented with and demonstrated to their own satisfaction the effectiveness of the method tried and at the same time their results furnished practical information to others.

Practical Information Gained from these Co-operative Weed Experiments.

1. That such weeds as Perennial Sow Thistle, Twitch Grass, Wild Mustard and Bladder Campion, can be successfully and comparatively easily controlled by proper methods of cultivation and cropping.

2. That good cultivation followed by rape sown in drills provided a means of suppressing both Perennial Sow Thistle and Twitch Grass.

3. That rape is a more satisfactory crop to use in the destruction of Twitch Grass than Buckwheat.

4. That rape gives much better results in the suppression of Twitch Grass and Perennial Sow Thistle when sown in drills and cultivated than it does when sown broadcast.

5. That thorough deep cultivation in fall and spring followed by a well cared for hoed crop will rid a field of Bladder Campion.

6. That mustard may be prevented from seeding in oats, wheat and barley by spraying with a twenty per cent. solution of iron sulphate without any serious injury to the standing crop, or to the fresh seeding of clover.

Potato Disease Investigation in Co-operation With Agricultural Representatives.

This work has been carried on in order to determine the best source from which to obtain seed potatoes free from the so-called physiological diseases, such as Leaf Roll and Mosaic, and which would give larger yields. Seed potatoes of three varieties, namely Irish Cobbler, Green Mountain and Dooley were obtained from Northern Ontario, Old Ontario selected stock, Old Ontario common stock and the Maritime Provinces. Seed from these sources was planted side by side in plots in twelve counties in Ontario. The Agricultural Representatives co-

operating with the farmers in their counties looked after the planting, spraying and cultivation of these plots. During the summer each plot was inspected for disease by a member of this Department. The following table summarizes the results of these experiments, and shows the average percentage of Leaf Roll and Mosaic found in the plants grown from the seed of the three varieties from the four different sources.

No. of plants inspected	120
No. of plants examined	29,000
No. of farms on which plots were situated	12
Average percentage of Leaf Roll in Irish Cobblers:	
Northern Ontario	1.4 %
Old Ontario selected	6.4 "
Old Ontario Common	8.2 "
Maritime	1.1 "
Average percentage of Leaf Roll in Green Mountains:	
Northern Ontario	.5 %
Old Ontario selected	4.6 "
Old Ontario common	5.5 "
Maritime	.6 "
Average percentage of Leaf Roll in Rural New Yorker (Dooley):	
Northern Ontario	3.4 %
Old Ontario	4.8 "
Average percentage of Mosaic in Irish Cobblers:	
Northern Ontario	.2 %
Old Ontario selected	2.7 "
Old Ontario common	4.2 "
Maritime	.2 "
Average percentage of Mosaic in Green Mountains:	
Northern Ontario	.1 %
Old Ontario selected	4.2 "
Old Ontario common	6.5 "
Maritime	1.4 "
Average percentage of Mosaic in Dooley:	
Northern Ontario	.9 %
Old Ontario	1.5 "

Experiments to Control Late Blight of Celery.

Spraying experiments to control late blight of celery have been conducted in co-operation with the Horticultural Department for the last nine years. During the first eight years such fungicides as Bordeaux mixture, lime sulphur, sulphocide, formaline and corrosive sublimate were tested in regard to their efficiency in the control of late blight of celery. In the eight years' experiments Bordeaux mixture proved to be the only fungicide which gave uniformly satisfactory results. This year liquid Bordeaux and Bordeaux dust were experimented with in order to ascertain whether the dust could be recommended as a substitute for the liquid Bordeaux. On October 15th when the celery was harvested plants sprayed with the liquid Bordeaux were commercially free from blight. The unsprayed plants were almost completely destroyed by the blight. Sprayed plants averaged 150 marketable plants to one hundred feet while unsprayed plants of the same varieties were practically useless for market purposes. Plants treated with the Bordeaux dust were commercially free from blight and were as vigorous in growth as the sprayed plants, but there was a little more blight on them.

It was found that the Bordeaux dust could be very rapidly and easily applied, but it did not adhere to the leaf as well as the liquid Bordeaux and hence the protection against blight was not quite so complete.

Experiments to Test the "Dry Formaldehyde" Treatment for the Prevention of Oat Smut.

This method has been tested for four successive years. In all thirty-five field trials under ordinary farm conditions made, and 2,122 bushels of oats treated. The varieties of oats treated included O.A.C. No. 72, Alaska, Banner, White Cluster, Mammoth Cluster and Siberian. In 1918, number of bushels of oats treated 61; percentage of smut which developed in crop, from treated seed 0, percentage of smut which developed in crop from untreated seed 6.5. In 1919 number of bushels of oats treated 630; percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.26. In 1920 number of bushels of oats treated 1,016; percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.36. In 1921, number of bushels of oats treated 415; percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 5.8.

The average for the four years shows no smut in crop from treated seed and 4.23 per cent. of smut in crop from untreated seed.

Tests were made also to determine whether this treatment injured the vitality of the seed. In the four years' experiments the average percentage of germination of treated and untreated seed was found to be exactly the same, namely 97.5 per cent.

It is thus seen that the results have been uniformly satisfactory throughout the four years' experiments. No injury to the vitality of the seed has resulted and the control of the smut has been almost perfect. In no case has there been more than a trace of smut in any of the fields sown with treated seed, while the amount of smut in the fields sown with untreated seed for check averaged 4.32 per cent. In some of the checks there was over 15 per cent. of smut present.

The advantages of this method over those which have been in general use heretofore are, simplicity, rapidity and ease of application. In these experiments it was found that one hundred bushels of oats could be treated in fifty minutes by this method and that there was no waiting for the seed to dry after treatment or danger of the grain sprouting or moulding or being swollen so that it would not run freely through the drill.

Experiments with Winter Blight or Streak of Tomatoes.

A very common disease in tomatoes grown under glass in Ontario, often causing serious losses and in some instances making the production of a profitable winter crop of tomatoes impossible. The disease sometimes occurs in fields, especially in those very heavily manured. The name Winter Blight has been applied to this disease because it is especially troublesome in the winter crop of tomatoes. It is called streak by the growers on account of the characteristic dead, brown, shrunken lesions appearing on the stems.

Experimental work was begun on this disease in 1914 and has been continued every year since. Some of the experiments were carried on in the College greenhouses, but most of them were conducted in large commercial greenhouses.

A preliminary report on this disease was published in Phytopathology, Volume 6, No. 2, 1916. The results of the experiments conducted up to that time lead us to conclude that no pathogene was responsible for this disease but that it was the result of soil conditions.

Subsequent work has supported these preliminary conclusions. During the past five years almost uniformly satisfactory results have been obtained in the control of this disease by the addition of phosphoric acid and potassium to the soil. In many cases it has been found possible to cause tomato plants to outgrow the winter blight by the application of these fertilizers to the soil. Such treatment has resulted in the saving of large commercial crops of tomatoes here in Ontario.

PHYSICS.

Practical Assistance Offered by the Department.

To those who are interested in the various operations included under the following heads, the Department of Physics is prepared to supply information; and, where possible, give assistance upon application being made for the same.

The list is as follows:—

(1) Hydraulic rams, (installation and operation).
(2) Lightning rod systems.
(3) Sewage disposal plants.
(4) Drainage surveys, tile drains, and open ditches.
(5) Labor-saving devices for the home.
(6) Fresh water supply systems for rural districts.
(7) Ice houses; construction, and ventilation.

Correspondence.

It is a significant fact that this year practically no inquiries re "tractors or tractor operations" were received. Relative values of tractors and farm products are responsible for the falling off of this correspondence. Letters of inquiry re "septic tanks," and "ice houses" have more than doubled, which is also very significant. Rural districts are beginning to take sanitation in the home seriously. Information concerning "rodding systems" has been handed out in ever increasing volume, and the losses from lightning strokes are being decreased each year at a very satisfactory rate indeed. "Weather readings" have been sent out this year at the request of the farmers, manufacturers, insurance companies, real estate men, agricultural representatives, courts of law, government officials investigating the activities of the European Corn Borer, and to the American Consul at Hamilton. We find that the gathering of weather records from parts of the province hitherto untouched is being asked for to such an extent that more weather stations will have to be established. Owing to the lively interest being shown in lighting systems, and power on the farm, exclusive of tractors, the information sent out in the form of plans and specifications for lighting of farm buildings and factories has called for a great increase of time spent in this part of extension service.

Investigation and Extension Work.

Lightning Rod and Rodding Systems. This year has seen the satisfactory close of the campaign to demonstrate to the farmers of Ontario that Lightning Rod Systems, properly installed, protect, and the standardizing of cable and

other protective equipment has made it possible now for the farmers to buy the cheapest possible rodding system on the market in Ontario, and have his equipment and method of installation guaranteed efficient by government inspection of materials used, and by rules and regulations to govern all installations.

Water Supply and Sewage Disposal. Bulletin No. 267, "Farm Water Supply and Sewage Disposal," published in 1918, was revised and brought up to date early in the year that has just closed. The installation of several septic tanks and absorption beds was supervised this year, and details of construction and costs are now available upon application. Lantern slides of installations in their various degrees of completion were made and are being used in lecture and demonstration work.

A survey was made of Markham Township with a view to determine the conditions obtaining in that township in connection with fresh water supply, and the results obtained from one of the most up to date parts of our province revealed the following facts: The same inefficient methods still obtain of carrying water for domestic purposes long distances instead of having it on tap in the homes. The cattle in the barns are receiving much better treatment in this respect than are those who are responsible for the cleanliness and comfort of our country homes. Only about ten per cent. of the farmers in the township have installed water systems of any sort. Inquiries are beginning to come in so rapidly in connection with the installation of water systems on farms, that it will be necessary in the near future to place a man in the field full time to lay out systems, and another man to make plans of these systems. One man's time is now being devoted almost entirely to the work of advising those who are seeking for information, and anxiously waiting for assistance in the practical work of designing systems to suit their special cases.

The Physics Department is this year co-operating with the Department of Geological Surveys by way of determining if it is possible for the latter to investigate the water supply in the different rock formations in the various parts of the province with a view to advising farmers as to the best methods of obtaining fresh water supply. Conditions in the north and east of the province are being investigated in a special way, and reports are coming in from representatives throughout the whole province, which indicate that immediate action must be taken to bring about improved sanitary conditions and more efficient systems than those that are at present serving the needs of the rural communities.

Considerable investigation of hydraulic ram installations during the summer of 1921 has been carried on. Assistance in the actual installation of some of the more important systems was given, and details of cost and other data were kept, and photographic records of various phases of the work made, to be used as material for class instruction and for bulletins.

Winter Temperatures in Septic Tanks. An investigation of winter temperatures in septic tanks and absorption beds is being carried on to determine the possibility of freezing in the tanks and beds during periods of excessive cold.

Lightning Rod Capacity. In order to form a clearer estimate of the quality of electricity constantly being discharged from points on lightning rod installations, attempts are being made to investigate the electric discharges from an aerial cable, grounded at its base. It is hoped that further investigation may lead to a still smaller cable, than that now considered standard, being adequate to provide protection for our buildings.

Short Course.

Short Course in Farm Power. During January and February 1922, our short course in Farm Power will be altered to include instruction in farm water supply and sewage disposal, and farm lighting. Extra lectures will be given in these accompanied by demonstration of nine automatic fresh water systems, each and every one of which has its own outstanding distinctive features. We are assured again this year of the usually hearty co-operation of the tractor companies in our efforts to give to the two hundred students in attendance the best possible instructions in the theory and practice of farm power appliances. Last year's short course in Farm Power taxed the lecture rooms and laboratories to their full capacity, in spite of the fact that sales of tractors fell off considerably during the year.

Light and Power on the Farm.

Special information is being gathered concerning the relative cost of hydro power versus gas-electric power for all of the various conditions of installation of light and power plants necessary on our Ontario farms. This information will be available in tabulated form for use of inquirers by March, 1922. Cost of installation of household appliances was given in our 1920 report, and is still available when required by those contemplating the introduction of up-to-date systems of any sort on the farm homes.

DRAINAGE.

The activities carried on by this department this year have, on the whole, been very gratifying. Conditions have been different than for a number of years. In the process of reconstruction the reduction in the price of tile and machine operation did not keep pace with farm produce, consequently the farmers in many instances were loath to undertake the work for which their plans had been laid. In many cases the preliminary steps were taken, but the actual work was laid over pending a drop in prices. Toward the end of the season this reduction has taken place. Tile has dropped from 25 to 35%, and digging from 15 to 25%. Further reductions may take place before spring, and the usual activity be resumed this coming summer. With the present indications there should be more actual drainage work undertaken this coming year than in any year previous.

The system of having permanent men in different districts has, as before, proved very satisfactory. More work, and more efficient work has been accomplished, errors and complaints have been reduced to a minimum. The fall work has been very well completed leaving a small number of jobs for the spring.

The following is a table showing the number of surveys and the acres surveyed during the summer:—

County	Number of Surveys	Acres
Brant	8	235
Bruce	2	125
Durham	1	30
Carleton	1	250
Essex	16	804

County	Number of Surveys	Acres
Grey	1	15
Glengarry	1	60
Haldimand	1	150
Halton	11	242
Hastings	7	185
Huron	4	425
Kent	50	3,799
Lambton	5	375
Lanark	1	40
Leeds	1	75
Lincoln	23	1,161
Middlesex	14	605
Norfolk	3	250
Northumberland	1	40
Ontario	3	110
Oxford	1	½
Peel	2	35
Perth	1	100
Peterboro	1	50
Prescott	1	50
Renfrew	2	100
Victoria	1	30
Waterloo	1	20
Welland	2	55
Wellington	3	195
Wentworth	11	328
York	2	222
	182	

Short Courses.

During January and February two Short Course Classes were conducted, one at Guelph and one at Chatham. Each was held for two weeks and was well attended. At the close of the course in Chatham an examination was held and several wrote for the Ditcher Operator's Certificate granted by the Department of Agriculture.

Ditching Machines.

During the season all three ditching machines have been in operation for the most part on demonstration work. The machine which was at La Vallee was moved to Verner, where a demonstration plot was put in for J. B. Leach. Much interest was taken in the operation of the machine, and every day many visitors came to see the work which was being done. Much interest was aroused in drainage work and there are prospects for considerable work another season. Consequently the machine was housed for the winter and will be operated there this coming summer.

The machine which was at the College was moved to Pakenham where two drainage plots were put in. Each of these opened up a section very much interested in drainage work, and where much work had been promised. However, with the poor crops and general depression most of the farmers did not see their way clear to do the work they had planned, and most of it was cancelled. Only a small amount of commercial work was done in the district. Later in the fall the machine was moved to the Ottawa Dairy Farm, but because of a bad breakdown which delayed operations for two weeks and the early indications of winter, it was necessary to lay the machine up until spring.

The third machine has been at Whitby all summer. It was put in repair and operated on the farm of W. E. Broughton at his expense and returned to the Provincial farm for their service this coming season.

Experimental Drainage Plots.

As has already been mentioned three demonstration plots were established during the summer, one at Verner, fifty miles east of Sudbury, in a section of the finest farming country in Ontario. The plot consisted of about twenty acres, one-half of which was drained. One carload of tile was used and during the installation of the drains not one stone was struck. This is the first drainage work for this district, and drainage is badly needed. Much interest has been aroused. The Township Council was interested in passing the by-law allowing them to borrow money under the Tile Drainage Act, and next season we expect much work to be undertaken in this district, providing tile can be secured at a reasonable price.

Two other plots were put in in Lanark County in the district of Pakenham. These were of the same nature as the plot at Verner, varying some in size. The district around Pakenham is badly in need of drainage, but so far the farmers are not fully aware of its importance. It is hoped that the plots put in this year will demonstrate the advantage of having their land tiled. These plots will be carefully followed for the next three years and the results reported.

Demonstration Plots.

Since 1912 some twenty-nine demonstration plots have been installed throughout the Province. During the past summer a special effort was made to visit these plots and estimate their value to the district as a demonstration. At the present time we are able to report on most of these plots. This report follows. Because of the poor crops in Eastern Ontario, little could be gained from an inspection of the plots and it was thought better that this be left for another season. On a whole the plots have been instrumental in encouraging drainage work and there is every reason to believe that the time and money they have cost has been well spent. In a few cases they have not shown beneficial results. In the case of Mr. Snell's plot in Haldimand County, where they have heavy clay soil the lines of the tile are too far apart, and with Mr. Zavitz' in Welland County the tile were put in in muck and have gotten out of line. Other cases where failure was reported was because of the poor outlet, which had not been given proper attention.

FARM ECONOMICS.

Considerable progress has been attained in all branches of the work undertaken by the Department of Farm Economics during the past year. The matter of instruction in farm management and its closely allied branches has been given much thought, and is being rapidly made more thorough and comprehensive. The farm management surveys have been extended to cover 2,100 farms in seven different areas, and representing six distinct types of farm. Cost-accounting investigations, a more intimate and detailed method of investigation, has been inaugurated on 65 farms representing three types of farms. Several investigations into specific price and rate-fixing problems of the live stock shippers, milk producers and tomato growers were conducted and all proved of special value in the settlement of these problems. The various lines of departmental activity are herewith more fully discussed under their individual headings.

Farm Management Surveys.

During the past years the farm management surveys of the dairy farming business in Oxford County, of the beef farming business in Middlesex County, and of the mixed farming business in the apple growing districts of Durham and Northumberland Counties were continued, this being made the final year of the surveys in Oxford and Middlesex Counties. In addition to the afore-mentioned surveys, new surveys were organized and conducted of the fruit growing business in Niagara district, and of that type of farming peculiar to South-western Ontario in those parts of Kent County within a radius of fifteen miles of Chatham.

The data obtained from the analysis of the Niagara 1920 survey and the Durham County Survey made in 1920 has been published and are now available for distribution, being bulletins Nos. 282 and 286. A considerable amount of work has been done on the other surveys, but these are not yet ready for publication.

During the year three reports on the cost of production of milk were prepared by the staff of this office and submitted to the Minister of Agriculture. The data presented in these reports were used by the dairymen and dealers in arriving at an equitable price to be paid to the producers of milk for their product. A bulletin on milk production costs has been prepared which is now in the hands of the printers and should soon be available for distribution.

At the request of a number of tomato growers in the Niagara district, a special investigation was conducted into the cost of growing and handling tomatoes. A report was prepared on this work which was used by the growers in making their agreement for the season with the canning companies.

Early in the year this department was able to be of material assistance to the Eastern Canada Live Stock Union in their case against what was considered exorbitant freight rates on cattle shipments. We are pleased to be able to state that the data obtained and analyzed by the members of this department were of no small value in gaining a favourable decision from the Dominion Railway Commission

In addition to the regular work of the department, we assisted the district representatives at most of the agricultural short courses held in the province.

Farm Cost Accounts.

In March of 1920 it was thought advisable to extend the work of the department to include an investigation of farm management conditions by detailed cost accounts. As practically no such work had previously been carried on in the province it was necessary to become thoroughly acquainted with the various systems in use where cost accounting had been successfully used for a number of years as a basis for farm management investigations. With this in view a representative of the department went to Cornell University at Ithaca, New York State, where the work is being conducted under the direction of Dr. G. F. Warren.

In April of the same year twenty-five farmers in co-operation with the department began cost accounting in Oxford County, the chief dairy district of Western Ontario. In May and June the same number of farmers commenced the work in the mixed farming district around Orangeville, comprising portions of Dufferin, Peel and Wellington Counties. The work is conducted along much the same plan as that being used in New York State except that, in place of visiting the farmer only once or possibly twice during the year, supervision is by the route

system. Each co-operator is called upon every month or six weeks and assisted with any difficulties which may have arisen and at the same time the books are checked to insure greater accuracy.

In each of the districts, farm survey investigations had been conducted for two and three years previous so that the supervisor was acquainted with the men, which greatly facilitated the selection of suitable co-operators. As a result, of the fifty men who commenced the work forty-four completed the year's work and thirty-eight of them are continuing this year.

In May of this year the work was also commenced on fifteen farms in Durham and Northumberland Counties in the mixed farming and orchard district along Lake Ontario.

Farm cost accounting works hand in hand with the surveys previously conducted by this department. By the survey method careful estimates are obtained from the farmer regarding his farm business; and while in this way it is impossible to obtain any definite data for the individual farm, yet by grouping farms of the same size in that particular district and obtaining average figures the results should very closely approximate those obtained by cost accounts.

One of the chief difficulties with the survey method is the fact that no definite idea can be obtained of the distribution of labour over the various enterprises on the farm.

In cost accounting a separate account is kept with each branch of live stock and with each crop. The actual transactions concerning each are recorded as they are made and in addition the number of man, horse and equipment hours used by each enterprise are also recorded. By this means it is possible to calculate the cost of production of each of the various commodities grown on the farm. As the work progresses it will also be possible to draw more definite conclusions from survey investigations by making use of cost accounting figures.

The data collected on the forty-four farms in 1920 are now being compiled in the office, the results of which will be available early in 1922.

Instruction.

During the past year the courses of instruction in the various phases of farm economics have been placed on a more permanent basis. It must be borne in mind, however, that as our investigational work proceeds it will be possible to further improve these courses.

Instruction is given to all students in attendance at the College as follows: (1) accounting, (2) farm management or farm organization, (3) marketing farm products, (4) principles of agricultural economics.

Previously only the first two courses were given but during this past year the latter courses were added.

The course in accounting includes a study of the double and single entry bookkeeping with special emphasis on those systems which are best adapted for the use of farmers. In addition, instruction in farm cost accounting is given, whereby the student who returns to the farm is enabled to make a detailed study of the farm business for purposes of reorganization on a more profitable basis. This course was given to first-year students and some advanced work was taken with the third year.

The course in farm organization was given to the students in the second year of their Associate course and to Seniors. Here students had the opportunity of studying types of farming, factors influencing farm profits, and the study and analysis of actual business records of representative farms.

Owing to the importance of marketing it was thought advisable that students should receive some training in the economics of marketing—marketing methods, services and agencies, the fairness of the charges made by those who render essential services and the cost of performing these services, the establishment of prices and price fixation, etc. This course was also given to Associates and Seniors.

The course in agricultural economics now given in the third year is designed to form a foundation for the foregoing courses. Under this heading we were able to discuss the development of the farmers' economic problem, the factors of agricultural production and the satisfactory continuation of these factors in the farm business, size of farms, taxation of agricultural land, farm labour supply and management, and other important economic problems which the farmer must solve. It is felt that this course will be of great value because it affords an opportunity to explore all phases of farm problems and tends to give the student a broad outlook in contrast with the view which is apt to be taken by a student who has closely specialized in any one branch of agricultural science.

Farm Mechanics.

The arrangement which existed between the College and the Department of Education for the training of normal students in manual training was terminated by mutual understanding last June. The time previously given to instruction of the normal students is now devoted to extended work with the first and second year students. To carry out the work prescribed for these two years we are considerably handicapped for lack of equipment and help in instruction. In the machine shop, equipped to accommodate twelve students, we have an average of twenty-four. The work is unsatisfactory as well as harrassing to student and teacher. With regard to the practical part of the work, during two periods a week, one man has to look after a group of students in one room while engaged in teaching a class in another room. We need a man to supervise and instruct the students in farm implements and motors if the work is to be of any real benefit to the student. With only two men on the staff it is impossible to give adequate supervision.

Pieces of machinery have been loaned by the following firms:—Massey-Harris, Toronto, binder head attachment on stand; Frost & Wood, Smith's Falls, binder head attachment; International Harvester Co., Hamilton, two binder head attachments; Dominion Steel Products, Brantford, one complete farm lighting plant.

Instruction in colour and design and in basketry has been given to Macdonald Institute students on two mornings and one afternoon per week during the term.

Numerous letters have been received regarding cement work and tractors, and requests for blue prints of wagon boxes, self-feeders and barn construction, etc.

APICULTURE.

The 1921 spring report from beekeepers throughout the province indicated less winter loss in colonies than for any previous year since reports have been received.

The light honey crop report also evidenced that bees had wintered well and that they were in good condition for the white honey harvest. An average of 75 pounds per colony was secured in 1921, against 46 pounds in 1920, and 44 pounds in 1919.

During the past year the same difficulty occurred as in previous years, in that the department could not secure enough experienced beekeepers to act as apiary inspectors for sufficiently long periods. The sending of non-resident inspectors into counties where they were not acquainted with conditions has meant much lost time and increased expense. Another serious difficulty, with non-resident inspectors, has been the impossibility of sending men out on inspection till settled fine weather, usually early in June. With resident inspectors inspection can be commenced directly nectar is available, and odd days utilized during April and May. At this time the beekeeper can spare some time away from his own apiary, when serious cases of disease can be investigated and remedial measures taken to prevent the spread of disease.

In all counties where American foul-brood exists, the local secretaries have been sent a letter from the department, asking for their co-operation and inviting the county association to recommend two or more successful resident beekeepers to act as apiary inspectors for the season of 1922. During the season of 1921, twenty-two men were engaged on apiary inspection and apiary demonstration work throughout the province.

From May 21st to July 18th, thirty-seven apiary demonstrations were held. The objects of the apiary demonstrations are to acquaint the beekeepers with the symptoms, diagnosis and treatment for American and European foul-brood, and also to demonstrate economical and most profitable methods of management of the apiary throughout the season.

An apiculture option is now available for students for the first time, and four men are specializing in this branch of agriculture.

The college apiary has been increased to over a hundred colonies, part of the colonies are wintered in the bee cellar in the apiculture building and part outside in various styles of wintering cases.

Two apiculture short courses were held, the winter short course in January with an attendance of twenty-five, and the summer short course in May with thirty-five students in attendance.

ENGLISH.

The most important matter to report is the reorganization of the department during this past year. The work has been carefully distributed among the staff and another assistant had been added.

On the whole, the appointment of an additional assistant has enabled us to consolidate our work, and we are now in a position to pay more attention to individual students than before.

The separation of the Associate and Degree classes at the College has given us an opportunity to reorganize our courses in English to some extent, and we now have courses of study which are in my opinion well suited to each class of students.

In the case of the students of the Associate course, an effort is made to give them practical training in English such as is suited to the needs of the rural community. Our chief difficulty is that students come to the College with great differences in previous training. Some students have had several years in the High School, while others have had only the meagre training of a few years in a rural public school. As a result we have to try to frame our course to suit the needs of the average student, and our first year's work in English Literature is about equivalent in difficulty to the work of the first year in the High School.

The distinctive features of the course in English at the O.A.C. are the practical character of the instruction in composition and journalism; the special attention that is given to public speaking and Canadian literature: and the fact that an effort is made to develop an appreciation of good music and good pictures as well as good literature.

In addition to the regular lectures in English, during January and February when the short course students were here, Dr. Stevenson gave a series of public lectures from 4.30 to 6 o'clock on Tuesday afternoons. In each of these afternoons the great painters and great musicians of a certain period were studied, and illustrations were given by means of lantern slides and phonograph records, and the programme was concluded by a short travelogue.

In January two recitals were given at the College by the Canadian poet, Bliss Carman. Massey Hall on both occasions was filled to its capacity, and it was an occasion long to be remembered by the students and staff of the College.

During the past year, in spite of the pressure of College duties, the department has undertaken a good deal of extension work. At the meeting of the Experimental Union in January two plays were performed, under the direction of the department of English, with the object of illustrating what types of plays are suitable for amateur performance in rural communities: and at the same meeting a report was presented as to the progress that had been made in community work during the year. Since then a group of students has undertaken to make a further study of rural community work, with a view to gathering material which may be of value to rural school organizations.

During the year two leaflets have been published by the department, one on "Plays" and one on "The Mock Parliament." A bulletin on "Debates and Plays," is now in press, and will be available soon.

MACDONALD INSTITUTE.

The Normal Course in Domestic Science.

Sixteen entered this course in September, 1919; one of the 1918 class re-entered in January, 1920; sixteen passed to the Senior Class in June, 1920; eleven passed the final examinations in June, 1921, and have received the Macdonald Institute Teacher's Certificate in Domestic Science.

Thirteen entered this course in September, 1920; twelve passed to the Senior Class in June, 1921; one of the 1919 class re-entered in September, 1921, and thirteen are now in attendance.

Nineteen entered the Junior Class in September, 1921, and eighteen are now in attendance.

The Associate Course.

Twenty-one entered this course in September, 1919; one transferred from the Normal to the Associate in January, 1920; eighteen passed to the senior class in June 1920; sixteen passed the final examinations in June, 1921, and have received the Macdonald Institute Associate Diploma. A graduate of the 1920 Associate Course completed a third year's work in June, 1921.

Twenty-four were admitted to the Junior Class in September, 1920: one was transferred from the Homemaker to the Associate Course; one of the 1918 class re-entered in January, 1921; twenty-three passed on to the Senior Class in September, 1921, and are now in attendance.

Thirty-one entered the Junior Class in September, 1921, and are now in attendance.

The Housekeeper Course.

(Beginning September, 1920, this course was called Institutional Management). Eleven entered the course in September, 1919; nine passed to the Senior year in June, 1921, and nine have received the Macdonald Institute Housekeeper Certificate.

Eighteen entered the Junior class in September, 1920: fifteen passed to the Senior class in June, 1920, and twelve are now in attendance.

Thirteen were admitted to the Junior Class in September, 1921; one was admitted in November, 1921, and fourteen are now in attendance.

Five former graduates have completed six months' institutional housekeeping, and have been granted the Macdonald Institute Professional Certificate.

The Homemaker Course.

Twenty-five entered the course in September, 1920, eight passed the final examinations in June, 1921, and have received the Macdonald Institute Homemaker Diploma.

Thirty-five were admitted to the course in September, 1921, and thirty-two are now in attendance.

The Short Courses.

These had in attendance:—

In the Winter term—January 1921 to March 1921	19
In the Spring Term—April 1921 to June 1921	15
In the Autumn term—Sept. 1921 to Dec. 1921	15

Optional Students.

Eight optional students joined various sewing, food and lecture courses during the year.

One student-worker from January 1921 to March 1921, and two student-workers now in attendance.

Summary of Attendance in 1921.

A—January to June, completing the College year 1920-1921.	
1. Normal Domestic Science—two-year course:—	
(a) Juniors	13
(b) Seniors	13
2. Associate—two-year course:—	
(a) Juniors	25
(b) Seniors	18
(c) Third Year Work	1
3. Institutional Management—two-year course:—	
(a) Juniors	16
(b) Seniors	9
4. Homemaker—one-year course	19

Summary of Attendance.—*Cont.*

5. Short Course in Domestic Science:—	
(a) Winter term students	19
(b) Spring term students	15
6. Optional Students	5
7. Student Workers	1
8. Public School Classes	53
B—September to December, opening the College year 1921-1922.	
1. Normal Domestic Science—two-year course:—	
(a) Juniors	18
(b) Seniors	12
2. Associate—two-year course:—	
(a) Juniors	31
(b) Seniors	23
3. Institutional Management—two-year course:—	
(a) Juniors	13
(b) Seniors	12
4. Homemaker—one-year course	36
5. Short Course in Domestic Science	15
6. Optional Students	3
7. Student Workers	2
8. Public School Classes	40
C—Students entered in both above lists	46
D—Total number of students in 1920	352
Total number of students in 1921	366

Report of Loan Collection Work for Women's Institutes.

Requests:—	
Home Interests	20
House and Housekeeping	58
Food	68
Nutrition	14
Health	12
Household Finances	6
Education	15
Clubs, Social Service, etc.	37
Arts and Crafts	11
Patriotic	5
Miscellaneous	242
	488

Answered by:—

1,061 Folders with pamphlets, articles or clippings.
108 Books.
37 Special letters.
4 Letters regretting material out.
225 Letters referred to Mr. Putnam, Massey Library, or other College departments.

FINANCIAL STATEMENT

COLLEGE DEPARTMENT.

Expenditure.

Salaries and wages	$136,275 55
Servants' pay-list	12,599 30
Meat, bread, groceries, laundry, engine-room supplies and fuel	92,971 33
Advertising, printing, postage and stationery	5,470 89
Expenses, Short Courses	2,996 03
Temporary assistance	5,569 03
Student labor	2,886 21
Travelling expenses and extra lectures	3,524 60
Travelling expenses in connection with potato disease	383 91
Library	2,967 21
Expenses, College judging team	400 00
Scholarships	110 00
Telephone Service, rents, etc.	868 74
Furnishings and repairs	7,196 05
Sewage	960 00
Contingencies	1,849 91
Feed of horses	154 25
Purchase and maintenance of automobiles, trucks and tractors	5,007 87
To rebate fees to Students Ontario Agricultural College	3,992 00
Maintenance five laboratories and gymnasium	13,889 34
Apparatus, machinery, fuel and expenses for course in Farm Power	462 61
Total expenditure	$300,573 83
Less revenue	97,590 96
Net expenditure	$202,982 87

Revenue.

Board	$71,323 30
Tuition and Laboratory Fees	19,016 00
Chemical Analyses	933 40
Rent of rooms	173 50
Rent of houses	4,705 00
Rent of Post-office boxes	40 00
Supplemental Examinations	292 00
Fines, Breakages, etc	736 60
Sundries	371 16
Total Revenue	$97,590 96

Student Labour.

To Different Departments.

College	$819 96
Chemical	21 60
Botanical	1 44
Bacteriological	1 44
Entomological	3 31
Gymnasium	41 40
Library	1 35
Farm	306 09
Experimental	868 75
Dairy	12 56
Poultry	21 24
Horticulture	740 03
Drainage	54
Mechanical	26 28
Apiculture	20 22
	$2,886 21

Total per month

November	$437 71
December and January	399 39
March	171 57
May	87 00
June	115 50
July	16 80
August	5 40
September	1,216 59
October	496 25
	$2,886 21

MACDONALD INSTITUTE AND HALL.

Expenditure.

Salaries and wages	$ 25,491 88
Servants' pay-list	3,612 56
Meat, bread, groceries, furnishings, repairs, laundry, engine-room supplies, fuel, and labor on grounds,	27,897 02
Library and stationery	749 47
Contingencies	479 63
Maintenance of laboratories in Institute	3,232 40
Total Expenditure	$ 61,462 96
Less Revenue	31,369 68
Net Expenditure	$ 30,093 28

Revenue.

Board	$ 21,886 40
Tuition	9,169 00
Supplemental Examinations	46 00
Fines, Breakages, etc.	266 28
Sundries	2 00
Total Revenue	$ 31,369 68

FARM DEPARTMENT.

Expenditure.

Permanent improvements	$ 996 03
Wages of men, foreman and stenographer	15,952 01
Purchase and maintenance of stock	16,343 66
Farm maintenance, including repairs, blacksmithing, binder-twine, seeds, furnishings, fuel, light, advertising, printing stationery, tools, implements, etc.	4,496 62
Contingencies,	225 94
Total Expenditure	$ 38,014 26
Less Revenue	11,919 22
Net Expenditure	$ 26,095 04

Revenue.

Sale of Cattle:—		
3 Bulls @ from $50.00 to $200.00	$ 320 00	
5 Cows @ from $40.00 to $100.00	335 00	
7 Calves @ from $15.00 to $65.00	295 00	
2 Steers @ $50.00 and $135.00	185 00	
1 Beef Carcass, 964 lbs. @ 10¢	96 40	
1 Beef Carcass, 760¼ lbs. @ 20½¢	155 85	1,387 25
Sale of Pigs:—		
22 Boars @ from $7.50 to $30.00	437 15	
8 Sows @ from $25.00 to $55.00	360 00	
98 Hogs, 22,140 lbs. @ from $7.75 to $15.00 cwt.	2,657 22	3,454 37
Sale of Sheep:—		
7 Sheep @ from $7.00 to $11.00		65 00
Sale of Milk:—		
21,992½ qts. @ from 7¢ to 9¢	1,805 02	
115,876 lbs. @ from $2.51 to $3.60 cwt.	3,942 49	
5½ qts. cream @ 30¢	1 65	
707.36 lbs. butter-fat @ from 26 to 58¢ lb.	233 42	5,982 58

REVENUE.—*Cont.*

Service of Animals	$	361 00
Sale of 28 2/3 bushels wheat @ $1.50		43 00
Sale of 10,240 lbs. ensilage @ $6.00 ton		30 72
Sale of 450 lbs. wool @ 9.21¢ lb.		41 45
Sale of 14,150 lbs. roots @ 40¢ cwt.		56 60
Sale of 2 loads wood for		7 00
Sale of 2 loads straw for		10 00
Hire of men and teams		87 25
Sundries		3 00
Hay for Horses; 13 horses for 1 year @ $30.00 each		390 00
Total Revenue	$	11,919 22

FIELD HUSBANDRY DEPARTMENT.

EXPENDITURE.

Permanent improvements	$	1,903 52
Assistant, specialist in plant breeding, stenographer, foreman, teamsters and laborers		21,549 09
Seeds, manure and special fertilizers		880 71
Furnishings, implements, repairs, blacksmithing, etc.		1,067 04
Printing, postage, stationery and contingencies		527 76
Purchase of horse and feed		493 53
Total Expenditure	$	26,121 65

DAIRY DEPARTMENT.

EXPENDITURE.

Permanent improvements	$	228 07
Wages, including foreman, cheesemaker, buttermaker, engineer, stenographer and book-keeper, assistant and official tester of dairy cattle		4,084 87
Purchasing, hauling, and manufacturing milk into butter and cheese		6,082 55
Furniture, furnishings, repairs, etc., laboratory expenses, gas, chemicals, and contingencies		1,592 10
Fuel and light		1,100 00
Total Expenditure	$	13,087 60
Less Revenue		2,873 60
Net Expenditure	$	10,214 00

REVENUE.

Sale of Cheese, 6,570¼ lbs. @ from 15 to 60¢	$	1,654 13
Sale of Butter, 443 lbs. @ from 15 to 50¢		198 30
Sale of Cream, 705¾ qts. @ from 50 to 80¢		354 73
Sale of Milk, 323 qts. @ 10¢		32 30
Sale of Skim and buttermilk, 181,860 lbs. @ 30¢ cwt.		545 58
Sale of Wheymilk, 89,920 lbs. @ 5¢ cwt.		44 96
Sundries		3 60
Rent for Houses		40 00
Total Revenue	$	2,873 60

DAIRY SCHOOL.

EXPENDITURE.

Permanent improvements	$	29 20
Wages of instructors, engineers, janitor, stenographer, book-keeper	$	2,521 79
Cleaning, painting, repairs and contingencies		167 52
Dairy appliances, separators, vats, expenses cheese and butter judges, inspecting factories, etc.		630 81
Advertising, printing, stationery, books, papers, etc.		149 33
Fuel and light		596 94
Purchase of milk for cheesemaking and cost of hauling milk and cream		5,499 98
Total Expenditure	$	9,595 57
Less Revenue		3,078 70
Net Expenditure	$	6,516 87

REVENUE.

Sale of Cheese, 6,282¾ lbs. @ from 15 to 60¢	$ 1,862 80
Sale of Butter, 865 lbs. @ from 45 to 50¢	421 59
Sale of Cream, 290 qts. @ from 50 to 60¢	145 06
Sale of Ice-Cream, 197 pints @ 20¢	39 40
Sale of Milk, 141 qts. @ 10¢	14 10
Sale of Skim and Buttermilk, 132,010 lbs. @ 30¢ cwt.	396 03
Sale of Wheymilk, 65,500 lbs. @ 5¢ cwt.	32 75
Sundries	25 97
Fees	141 00
Total Revenue	$ 3,078 70

POULTRY DEPARTMENT.

EXPENDITURE.

Wages of assistance, stenographer, and temporary assistance	$ 4,983 00
Furnishings and repairs	1,749 95
Permanent improvements	298 90
Purchase of stock	399 56
Fuel, light, and contingencies	1,555 74
Experiments with incubators, fattening and feed	11,257 24
Feed of horse	60 00
Poultry Extension Work	6,856 32
Total Expenditure	$ 27,160 71
Less Revenue	14,261 21
Net Expenditure	$ 12,899 50

REVENUE.

Sale of Live Poultry:—		
1,452 Live Birds for	$ 3,833 50	
160 Day old chicks @ 8¢	12 80	
194 Day old chicks @ 10¢	19 40	3,865 70
Sale of Dressed Poultry:—		
4,520 5/8 lbs. @ from 19 to 75¢		1,604 56
Sale of Eggs for Hatching:—		
611½ Settings @ from $1.00 to $3.00	1,196 00	
10,099 Eggs @ from 6½ to 13¢ each	1,259 42	2,455 42
Sale of Eggs for Domestic Use:—		
13,877½ dozen @ from 19 2/3 to 90¢		6,243 78
Prize-money Ottawa Egg-laying Contests		86 75
Sundries		5 00
Total Revenue		$ 14,261 21

HORTICULTURE DEPARTMENT.

EXPENDITURE.

Permanent improvements	$ 499 99
Foreman, fireman, stenographer, teamsters, and laborers	15,000 00
Manure, trees, plants, bulbs, implements, tools, furnishings, repairs and contingencies	4,698 67
Fuel and light	1,249 64
Feed of horses	494 68
Draughtsman, Landscape Gardening	1,500 00
Total Expenditure	$ 2,3442 98
Less Revenue	1,548 38
Net Expenditure	$ 21,894 60

REVENUE.

Sale of Fruit, Vegetables, etc., as per itemized statements rendered monthly	$	1,548 38

MECHANICAL DEPARTMENT.

EXPENDITURE.

Salary of foreman	$	1,750 00
Furnishings, repairs, and tools		240 04
Total Expenditure	$	1,990 04

SOIL PHYSICS DEPARTMENT.

EXPENDITURE.

Services and expenses of temporary assistants in connection with Farm Drainage Demonstrations	$	5,491 96

APICULTURE DEPARTMENT.

EXPENDITURE.

Wages, equipment and maintenance	$	2,713 31
(Vote 231, item 6) To establish and maintain Queen Rearing Apiary		2,810 41
Total Expenditure	$	5,523 72
Less Revenue		292 75
Net Expenditure	$	5,230 97

REVENUE.

Sale of Honey, etc., as per itemized statements rendered monthly	$	292 75

FORESTRY DEPARTMENT.

EXPENDITURE.

Contingencies	$	999 65

SUMMARY.

College	$ 300,573 83	$ 97,590 96	$202,982 87
Macdonald Institute and Hall	61,462 96	31,369 68	30,093 28
Farm	38,014 26	11,919 22	26,095 04
Field Husbandry	26,421 65	.....	26,421 65
Dairy	13,087 60	2,873 60	10,214 00
Dairy School	9,595 57	3,078 70	6,516 87
Poultry	27,160 71	14,261 21	12,899 50
Horticulture	23,442 98	1,548 38	21,894 60
Mechanical	1,990 04	.....	1,990 04
Soil Physics	5,491 96	.....	5,491 96
Apiculture	5,523 72	292 75	5,230 97
Forestry	999 65	.....	999 65
	$ 513,764 93	162,934 50	350,830 43

I have the honour to be,
Your obedient servant,
J. B. REYNOLDS,
President

Ontario Department of Agriculture

FORTY-THIRD ANNUAL REPORT

OF THE

AGRICULTURAL

AND

EXPERIMENTAL UNION

1921

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

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1922

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To His Honour HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the pleasure to present herewith for the consideration of your Honour the report of the Agricultural and Experimental Union for 1921.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1922.

Ontario Agricultural and Experimental Union

OFFICERS FOR 1922

President	J. W. Widdifield, M.P.P., Uxbridge, Ont.
Vice-President	J. Baker, Solina, Ont.
Secretary	C. A. Zavitz, Agricultural College, Guelph.
Assistant Secretary	W. J. Squirrell, Agricultural College, Guelph.
Treasurer	A. W. Mason, Agricultural College, Guelph.
Directors	Pres. J. B. Reynolds, J. B. Spencer, Wm. Elliott, M.P., W. H. Porter, J. M. McCallum.
Auditors	R. C. Moffatt and A. M. Porter.

COMMITTEES ON CO-OPERATIVE EXPERIMENTAL WORK.

Field Husbandry	C. A. Zavitz, (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, A. E. Whiteside.
Agricultural Botany	J. E. Howitt, (Director), T. G. Raynor, Herbert Groh, W. G. Evans.
Forestry	E. J. Zavitz (Director), A. H. Tomlinson, H.A. Dobrance.
Agricultural Chemistry	R. Harcourt (Director), S. Waterman, J. A. Neilson, A. H. McLennan.
Apiculture	F. E. Millen (Director), N. Ure, E. J. Dyce.
Farm Literature	O. J. Stevenson (Director), W C. Blackwood. J. P. Sackville.
Agricultural Physics	W. C. Blackwood (Director), R. R. Graham, R. C. Moffatt, F. L. Ferguson.
Bacteriology	D. H. Jones (Director), T. H. Lund, A. Davey.
Animal Husbandry	Wade Toole (Director), J. P. Sackville, R. G. Knox.

TREASURER'S REPORT, 1921

Receipts.	
Balance from 1920	$1,562 78
Government Grant	2,750 00
Membership fees, 279 at 50c.	139 50
Interest	60 24
	$4,512 52

Expenditures.	
Agricultural Experiments	$2,293 12
Agricultural Botany	52 25
Agricultural Physics	56 35
Farm Literature	67 95
Expenses Annual Meeting, 1921	193 20
Meeting of Executive	15 02
Printing, Postage, etc., Annual Meeting, 1922	180 25
Total	$2,858 14
Balance on hand	1,654 38
	$4,512 52

Ontario Agricultural and Experimental Union

ANNUAL MEETING

The forty-third annual meeting of the Ontario Agricultural and Experimental Union was held at the Ontario Agricultural College, Guelph, on Tuesday and Wednesday, January 10th and 11th, 1922. This meeting included in all, six sessions. The evening session of Tuesday convened in Massey Hall, and that of Wednesday in the College Gymnasium. The morning and afternoon sessions were all held in Massey Hall. The sessions on the whole were well attended. The reports and the most important discussions which took place during the meeting are embodied in this report.

At four o'clock on Tuesday afternoon, January 10th, the members of the Experimental Union visited the Macdonald Institute to look over a demonstration of the work done in Home Economics which was specially prepared for the occasion by the students under the supervision of the Director of this Department.

According to arrangements one session was held on Wednesday evening and two sessions were held on Thursday by those interested in co-operative marketing with the idea of starting provincial organization work in the marketing of dairy products and possibly of poultry and eggs, potatoes, honey, etc., following somewhat the same system as that recently adopted in the marketing of fruit. These three later sessions were held under the College Department of Farm Economics.

SECRETARY'S REPORT

Dr. C. A. Zavitz, Agricultural College, Guelph.

Organized voluntary co-operation might be given as the fundamental working basis of the Experimental Union. For over a third of a century, the work has been developing quietly, economically, and substantially from a very small start in 1886. The first year, twelve farmers volunteered to co-operate in the work and this number steadily increased from year to year until there has been an average annual number of 2,750 experimenters in Field Husbandry alone for the thirty-six year period. In the first few years, the co-operative experiments were confined entirely to varieties of farm crops and to different manures and fertilizers. Other lines of agriculture have been added from time to time until there are now eight separate committees on co-operative work, each committee consisting of a director and two, three, or four other members. A few of the recent results are here referred to very briefly.

In co-operative experiments conducted for four years, excellent results have been obtained in the use of the (dry) formaldehyde treatment for the prevention of oat smut. This is a comparatively simple treatment and one which is likely to be adopted quite generally. Professor J. E. Howitt is the director of the Committee in Agricultural Botany.

In 1921, crop tests were made with nitro-bacter soil vaccine which has been extensively advertised. So far no special advantage has resulted from the use of this material. Professor D. H. Jones expects to continue the Co-operative tests in 1922.

A rather exhaustive study has been made of the water supply and conveniences in the farm homes of Ontario by R. R. Graham, who is now prepared to furnish some good information on this subject

Dr. O. J. Stevenson's co-operative survey of farm literature has formed a basis on which to recommend plays, debates, etc., suitable for rural Ontario.

Definite methods of eradicating some of the worst weeds in Ontario have been formulated and tested out on numerous farms under the direction of the Experimental Union Committee in Agricultural Botany. The weeds which have received special attention so far have been perennial sow thistle, bladder campion, wild mustard, twitch grass, and wild oats.

Some valuable co-operative experiments are being conducted in re-forestation in some of the older sections of Ontario, but of this branch of the work, a report is submitted only about every five years.

Of the seven varieties of corn recommended by the Ontario Corn Growers' Association, the Golden Glow has given the highest average yield of grain per acre in the co-operative experiments in each of five out of the last six years.

The O.A.C. No. 181 variety of field peas which was originated at the Ontario Agricultural College through hybridization and which was sent out in the spring of 1921 for the first time, surpassed each of three other leading varieties by about four bushels per acre.

Other leading varieties of grain crops in the co-operative experiments have been O.A.C. No. 21 barley, Wild Goose and Marquis spring wheat, O.A.C. No. 104 and Dawson's Golden Chaff winter wheat, O.A.C. No. 72 and O.A.C. No. 3 varieties of oats, Guy Mayle hulless barley, O.A.C. No. 61 spring rye, Pearce's Improved Tree beans, Steele, Briggs' Good Luck swede turnips, Simmers' Improved Giant Short White field carrots, Golden Bantam sweet corn, Irish Cobbler and Green Mountain potatoes, etc.

Our standard seed mixture of oats and barley, consisting of one bushel of each by weight has given a greater yield per acre in the co-operative experiments in each of the past three years than when either Goose Wheat or Golden Vine peas were added to this seed mixture.

Northern grown seed potatoes have yielded somewhat higher than southern seed in the experiments of each of the last four years. The difference does not seem to be so great, however, if selected seed comparatively free from disease can be obtained from southern Ontario.

Numerous co-operative experiments with fertilizers and manures on farm crops have been conducted. Commercial fertilizers have given more decided results with turnips, mangels, or potatoes than with oats, winter wheat or even corn.

The Secretary of the Union is also Director of the Co-operative experiments in agriculture and his full report gives much additional data.

It is a pleasure to state that the last Annual Report of the Experimental Union was printed and distributed as early as possible and that it reached the farmers in very good time in the spring of 1921.

PRESIDENT'S ADDRESS—"A MORE BEAUTIFUL ONTARIO."

J. B. Spencer, Ottawa.

For a number of years I have given attention to horticultural work in the City of Ottawa as an official of the Ottawa Horticultural Society. Through the work of this society a great interest has been aroused in horticulture and the appearance of the city has been much improved. When brought face to face with the question of preparing an address for this meeting, it seemed a natural thing that I should take advantage of the opportunity to urge before a wider constituency the need for a general beautification of the country-side by horticultural means.

The Ottawa people have been very responsive. We have approached the two thousand mark in membership, practically all of whom have become planters of well selected premiums and many of them exhibitors of the products of their gardens. The ex-students in the audience before me to-day, representing practically every corner of the province, have had great advantages in their association with this institution. It is their privilege to take a leading part in improving rural conditions in their respective communities. Until I became a student of this College, I had never seen many of the beautiful things that may be used to adorn the home surroundings. It was of the greatest interest to me to spend time on stormy days amongst the gaudy cinnerarias with their wonderful brilliance of colour and the calceolarias with their beautiful shades and unusual floral forms. I have no doubt that many of the students have received similar inspiration, and that it has been reflected in their lives in later years. Nor do I forget the wealth of bloom that the students are able to enjoy on the campus of this institution. In our days the courses extended well into June. This gave us an opportunity which perhaps the present students do not enjoy. The caragana with its golden hangings, the deutsia, the philadelphus, and the wonderful showy spiraes, were all new to me, and I am sure that my experience does not differ from that of many of the ex-students, who in many cases must have resolved upon returning to their homes to secure some of these beautiful shrubs and other new planting material for the improvement of their home surroundings.

The Experimental Union has been far more successful in crop improvement work than many of us really appreciate. It has become a commonplace to sow only the best varieties of field crops. We have learned through the Union the value of variety and strain, and the care that should be exercised in many of the details in connection with the growing of crops. It is not surprising that this work has succeeded because of its commercial appeal, without attention to which no farmer can prosper. The Union has not been neglectful, however, of the esthetic side of rural life. From time to time ornamental planting material has been made available to the membership, and encouragement has been given, as it is now, through the Horticultural Division of the College, to the planning and planting of school grounds and other public places. The enthusiasm for this work has suffered because it does not afford immediate financial returns, although we must all admit that well-planted grounds provide satisfaction of a higher character than the possession of bank balances and mortgage securities.

From time to time the Experimental Union has listened to most interesting and valuable addresses on rural beautification. These, as a rule, have dealt with the actual planning and planting of private and public grounds. I shall not attempt to deal with the subject in this way, but would urge upon the students, ex-students, and others who may be within my hearing, the duty of throwing the weight of their influence and advice into the activities of the organizations to be found throughout the country, which are more directly concerned with this work.

Single handed we can do much by example in our immediate neighbourhood, but we have all learned the value of co-operative effort through organizations that are everywhere to be found for advancing the interests of the rural community. Accomplishments of any magnitude for the public good depend very largely upon the initiative and enthusiasm of one or two individuals. We can all recall instances that support this claim. The city of St. Thomas has already won international recognition as a beautifully planted city. Very largely through the efforts of Dr. F. E. Bennett, president of the local Horticultural Society, the spirit of beautification has become contagious. The magnitude of their annual effort will be to some extent appreciated when it is stated that a quarter of a million of spring flowering bulbs were brought in by the Society during the past autumn and are now nestling beneath the snow or in pots in the cellars of the citizens for winter and spring blooming. This Society has recently set out a native shrubbery bed of considerable dimensions with conifers, sumachs, native crabs, red dogwood and witch hazels and the whole planted with inexpensive daffodils, with a border of iris. The nursery people may not enjoy this particular sort of enterprise because it will demonstrate the use that may be made of native planting material, which is available within reach of practically every community in the country. The Society finds no difficulty in raising large amounts of money to carry on its work and, as already pointed out, to Dr. Bennett and his co-workers must be ascribed much of the credit for the atmosphere that has been created throughout the city.

The late R. B. Whyte might be cited as another example of the value of public spirit and the opportunity for individual effort. The late Mr. Whyte was one of the organizers of the Ottawa Horticultural Society, and lived to see it become one of the most influential in Canada. As an officer of the Society he for many years assisted in its guidance taking an active interest in its exhibitions and offering special prizes for competition. He initiated the work of planting ornamental shrubs about the hospitals and public schools in the city. Mr. Whyte originated the Ottawa Flower Guild, and year by year distributed seeds, bulbs, and plants to thousands of children. Later he organized a Potato Growing Contest for boys in two counties adjoining Ottawa and a Gardening and Canning Competition for girls, in the same vicinity. He was the originator of the Herbert raspberry as well as some very excellent varieties of gooseberry. Some five or six years ago Mr. Whyte planted an extensive herbaceous border at a public school close to his farm, and in many other ways secured to a wide district an appreciation of ornamental horticulture.

The city of St. Catharines also presents an example of the public spirit of one of its citizens. Through the influence of the late Mr. W. B. Burgoyne, the city has become a veritable rose garden in which is held one of the most gorgeous annual rose exhibitions in Canada. Some four years ago, Mr. Burgoyne

presented to the city a municipal rose garden, comprising upwards of a thousand plants. This garden is situated in a public park thus giving the citizens free access to its beauties.

The late Mr. Rittenhouse did an equally public spirited service for the village of Vineland in Lincoln County. These outstanding examples will suggest similar ones to most of you, and will, I trust, become an incentive to you all to lose no opportunity to encourage the beautification of the localities in which you reside. There are many organizations with which you may associate yourselves. The Ontario Horticultural Association has affiliated branches everywhere, more particularly in the towns and cities. There are, however, a number in active operation in rural communities and there is no reason why many more should not be organized, with headquarters, if necessary, in small villages.

These societies receive very liberal assistance from the provincial Department of Agriculture. This money is available to horticultural societies from an appropriation voted by the Legislature each year, and distributed to branch societies according to membership. Some of the smaller societies with from 60 to 70 members receive from $50 to $60, whereas a membership of 150 will bring more than $100 in easy money. The societies in return for this grant are required to hold educational meetings and shows, and in other ways encourage the planting of shrubs and flowers. Many of the town and village societies claim in their membership farmers from the surrounding district. As a rule the local municipality duplicates the government grant. The membership fee is usually $1 per year. The securing of members is an exceedingly simple matter because it is the common practice of societies to provide each member with a full dollar's worth of planting material purchased wholesale. I can think of no more worthy or profitable effort on the part of ex-students of this College than to campaign for active membership in some of the existing societies or to organize new ones in districts not already served.

Another organization that is giving valuable public service and to which the ex-students of the College can give assistance, is the Women's Institutes. There would seem to be no public service of an elevating character that the Institutes are not ready to help. In a number of villages not served by horticultural societies they have succeeded in brightening up the town. This has been accomplished by the reclaiming of unsightly vacant lots, and planting of school grounds, and in organizing competitions for gardening and lawn making.

An opportunity for service in the encouragement of horticulture is found in the provisions of the new Community Hall Act. Communities who take advantage of this Act do so from a public spirited standpoint, and at once invite the interest of every public spirited citizen. The finest opportunity is therefore afforded to those who are capable of giving useful direction to the work of community welfare. No better opportunity for service in the direction I have indicated could be afforded than the immediate planning and planting of community hall grounds, towards which, I understand, the Horticultural Division of this institution is ready to give substantial assistance.

The Department of Agriculture at Ottawa stands equally ready to help those who would promote this work. The lessons from tests carried on by the Experimental Farms System during the past forty years are at the disposal of all who may wish to make a study of the reports. Bulletins and circulars are always available from the Publications Branch of the Department of Agriculture at

Ottawa. Mr. W. T. Macoun, Dominion Horticulturist, and his staff spend much time in giving detailed information with respect to the characteristics, planting and culture of ornamental plants. The Experimental Farms System have instituted a Lantern Slide-Lending Service on the planting and care of farm home grounds, which it is hoped will be of peculiar value to promoters of work of this kind. Sets of slides with accompanying lectures will be placed at the disposal of responsible people for use in addressing meetings. Application for this service should be made to the Director of Experimental Farms at Ottawa.

There are many other sources of help available of which most of you are already aware. The task that I am laying upon you just now is not a work that need be undertaken with reluctance because there is an inherent appreciation in most people of beauty wherever it appears. Those who undertake a public-spirited effort in this direction meet with the readiest response from those on every side who need to be shown and started in making their own places more beautiful. An excellent work is being accomplished in the short course schools that are carried on throughout the country during the fall and winter. The programme of study in almost all cases includes instruction in planning and planting. These factors, which will undoubtedly bear fruit, are preparing the ground for a public-spirited effort on the part of the ex-students of this institution, who upon their return to their homes have a wonderful opportunity of giving to this province the evidence of culture and beauty which so strikingly secure the admiration of visitors to the Homeland.

J. W. Widdifield M.P.P.: I have been pleased with the exceedingly practical way in which Mr. Spencer has treated the subject chosen as the text of his presidential address. It is something new to have a practical subject treated in this way. We too often have a formal President's address which contains a few compliments and some other matters not at all to the point.

Just at the close of his address he intimated that there was an inherent appreciation in practically all of us for the beautiful. This keynote represents the possibility and probability of success in this matter. I am reminded of that character of whom Wordsworth speaks; most of you will recall Peter Bell. The poet says of him:

> "A primrose on the river's brim
> A yellow primrose was to him,
> And it was nothing more."

I am heartily in sympathy with everything that goes to make this rural Ontario a great country. On every one of our farms there is some physical feature, some natural beauty that we can intensify and bring to a higher state of perfection. Our forefathers, the pioneers of the country, in order to live had to subdue the forests. To make the home and its surroundings beautiful we cannot do without the tree, and it should always be the leading feature in the landscape, whether it is there in its natural state or has to be put there by artificial means.

When one moves to a new farm he should not be too hasty in cutting down the trees. These beauty factors may have taken hundreds of years to grow and they cannot be replaced in a few days.

On my own farm, which has been farmed for more than one hundred years, there is about three acres of a wood lot. It is a perfect beauty spot, and I intend to leave it undisturbed as long as I live.

In the country where there is usually an unlimited area we have the very best possible chance of beautifying our surroundings, and if we are to make the greatest success of farming and community life in general we must not neglect this feature.

PROF. J. W. CROW: This is a line of work which we in the Horticultural Department are much interested in, and it is indeed a gratification to have this subject so ably brought before an audience of this kind It is not generally recognized that we have in the Province of Ontario a sufficient number of enthusiasts in this line of work to constitute a membership in the Horticultural Societies approaching 30,000. We have something like fifty organizations, Horticultural Societies for the most part, in towns and cities, but I know of no reason why we cannot duplicate the work of those societies in the country districts.

I have taken the liberty of placing before you some copies of plans prepared by the Horticultural Department. We have supplied during the past year plans for school boards to the number of 28, farm homes 19, community parks and the like 17, and we have visited personally and consulted with men in 26 different localities. We are not at present able to take care of all applications that come to us but hope in a short time to be able to do so, and are pleased to know that there is a very great deal of interest and that there is a considerable call for work of this kind.

One of these plans is for a rural community centre; another shows a proposed Memorial Park, and a plan of this kind is very much in demand by communities where campaigns are being put on for community parks, memorial parks, and the like. All the plans sent out are not so attractive as these, some being much simpler and represent much less work. These plans are furnished on application in so far as we are able to keep up with the demand. If we require to visit a locality our expenses for the trip are paid; otherwise there is at present no other charge.

MR. HOLTERMANN: Some reference has been made to enhancing the value of property by work of this nature. I remember Mr. Rennie, who was Farm Superintendent of the College farm here for many years, telling me that he had made a practice of buying a comparatively run-down and unattractive farm and doing landscape gardening around the house and other buildings, and when he got it in good shape he would sell the farm. He found this practice very profitable. I have travelled through the Province a good deal and it is really pitiable to see how many farm houses there are with few or no trees around them. Norway Spruce trees set a farm off to great advantage, as well as serving as a wind-break in a very special way. I am sure that if more attention were paid to this line of work it would be a good financial investment, and in addition be attractive to the eye.

MR. OLIVER: It seems to me that the greatest trouble in Ontario at the present time is not the fact that the people on the farms do not appreciate beauty, but that it is due to the lack of education in these matters, and it seems to me that the men of these organizations and the students who go out from this College can do a great deal to enlighten the general public and to advance this movement for beautification in the Province.

REPORT ON CO-OPERATIVE EXPERIMENTS IN AGRICULTURE FOR 1921, INCLUDING TESTS OF CEREALS, POTATOES, ROOT AND FODDER CROPS, HAY CROPS, ETC.

DR. C. A. ZAVITZ, PROFESSOR OF FIELD HUSBANDRY, O.A.C., GUELPH.

The 1921 committee on Co-operative Experiments in Agriculture was as follows:—C. A. Zavitz (Director), W. J. Squirrell, A. W. Mason, C. R. Klinck, and A. E. Whiteside. The co-operative experiments in agriculture were started in 1886 in a small way and there has been no interruption in the work since that time and the number of experimenters in one year has reached slightly over five thousand.

In the autumn of 1920 we sent out material for six, and in the spring of 1921 for thirty-one, making in all thirty-seven distinct and separate experiments within the past year. Full and definite instructions were furnished with each of the thirty-seven experiments. Information regarding the two sets of experiments as sent out to prospective experimenters and to the agricultural journals and to the newspapers of Ontario was in the following form:—

WINTER CROPS, 1920-1921.

Material for any one of the six experiments here mentioned will be sent free to any Ontario farmer applying for it, if he will conduct an experiment with great care and report the results after harvest next year. The seed will be sent out in the order in which applications are received as long as the supply lasts.

1.—Testing three leading varieties of Winter Wheat	3	plots
2.—Testing one leading variety of Winter Rye and one of Winter Wheat	2	"
3.—Testing Spring Applications of five Fertilizers with Winter Wheat	6	"
4.—Testing Autumn and Spring Applications of Nitrate of Soda and Common Salt with Winter Wheat	5	"
5.—Testing Winter Emmer and Winter Barley	2	"
6.—Testing Hairy Vetches and Winter Rye as Fodder Crops	2	"

The exact size of each plot is to be one rod wide by two rods long. The material for Experiments Nos. 1, 2, 3, 5 and 6 will be forwarded by mail, and for the other one by express. Each person wishing to conduct one of these experiments should apply as soon as possible, mentioning which test he desires, and the material, with instructions for testing and the blank form on which to report, will be furnished free of cost until the supply of experimental material is exhausted.

SPRING CROPS, 1921.

The members of the Ontario Agricultural and Experimental Union are pleased to state that for 1921 they are prepared to distribute into every Township in Ontario, material for experiments with fodder crops, roots, grains, grasses, clovers and fertilizers. Fully 2,500 varieties of farm crops have been tested in the Experimental Department of the Ontario Agricultural College, Guelph, for at least five years. These consist of nearly all the Canadian sorts, and several hundred new varieties and new strains, a few of which have done exceedingly well in the carefully conducted experiments at the College, and will be used for the co-operative experiments throughout Ontario in 1921.

Each person in Ontario who wishes to join in the work may choose any one of the experiments for 1921, fill out the accompanying form of application, and return the same to the Director of the Co-operative Experiments in Agriculture at as early a date as possible. The material will be furnished in the order in which the applications are received, until the supply is exhausted. A sheet containing the instructions for conducting the chosen experiment, and the blank form on which to report the results of the work, will be sent to each experimenter at the time the fertilizers or seeds are forwarded. All material will be furnished entirely free of charge to each applicant, and the produce of the plots will, of course, become

the property of the person who conducts the experiment. In return, The Committee on Agricultural Experiments desires to ask that each experimenter will sow all the plots belonging to the particular experiment which he has chosen for 1921, and that he will be very careful and accurate in his work and forward to the Director a complete report of the results obtained from the test, as soon as possible after the plots are harvested.

All seeds and fertilizers will be sent in good time for spring seeding, providing the applications are received at an early date. The supply of material being limited, those who apply first will be sure of obtaining the desired outfit. Each applicant should make a second choice, for fear the first could not be granted. The experiment selected should be indicated by using its number as given in the left hand column in the list of experiments. Further information is given on the application form which is attached.

LIST OF EXPERIMENTS FOR 1921.

Grain Crops.

	Plots
1—Testing two varieties of Oats	2
2—Testing O. A. C. No. 21 Barley and Emmer	2
3—Testing two varieties of Hulless Barley	2
4—Testing two varieties of Spring Wheat	2
5—Testing two varieties of Buckwheat	2
6—Testing three varieties of Field Peas	3
7—Testing two varieties of Spring Rye	2
8—Testing three varieties of Soy, Soja, or Japanese Beans	3
9—Testing eight varieties of Flint and Dent Husking Corn	8

Root Crops.

10—Testing three varieties of Mangels	3
11—Testing two varieties of Sugar Mangels	2
12—Testing three varieties of Swedish Turnips	3
13—Testing two varieties of Fall Turnips	2
14—Testing two varieties of Carrots	2

Forage, Fodder, Silage and Hay Crops.

15—Testing the planting of Corn at six distances in the row	6
16—Testing Sudan Grass and two varieties of Millet	3
17—Testing Sunflower, Sorghum and Corn for Fodder	3
18—Testing Grass Peas and two varieties of Vetches	3
19—Testing Rape, Kale and Field Cabbage	3
20—Testing two varieties of Sweet Clover	2
21—Testing two varieties of Alfalfa	2
22—Testing unhulled, hulled and scarified Sweet Clover Seed	3

Culinary Crops.

23—Testing three varieties of Field Beans	3
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The size of each plot in each of the first twenty-six experiments and in Nos. 29 and 30 is to be two rods long by one rod wide; in Nos 27 and 28 one rod square. For Experiment No. 26 the Experimental Union will furnish the Sweet Clover seed and the Experimenter the lime as required.

If you wish to conduct ONE of the thirty agricultural experiments named on the accompanying circular, kindly fill out this blank form and return it as soon as possible.

The distribution will be confined to the choice varieties included in the various experiments. In filling out the blank form, therefore, it is neither necessary nor advisable to mention any particular variety or varieties.

All materials for experiments with instruction sheets enclosed will be sent by Parcel Post.

Address all communications to,

C. A. Zavitz,
Agricultural College, Guelph, Ont.

Application for Material for an Experiment.

I would like to conduct experiment number ....., but if all the material for that experiment has been applied for before my application is received I select experiment number . . . . . as my second choice. If this material for one of these experiments is forwarded to me, I will endeavor to

1. Carry on the test according to the instructions received with the seed;
2. Exercise care and accuracy in work; and
3. Report the result of the experiment as soon as possible after harvest, whether successful or not.

Weather Conditions.

The total amount of precipitation for each of the six growing months from April to September for 1921 and for the average of the past twenty-two years, as determined in the Department of Physics at the Ontario Agricultural College, is given as follows:—

Period	April	May	June	July	Aug.	Sept.	Total
	inches	inches	inches	inches	inches	inches	inches
1921 (1 year).....	4.48	3.03	1.80	6.04	1.68	3.80	20.83
1900-1921 (22 Years).....	2.52	2.94	2.73	3.58	2.95	2.49	17.21

It will be seen that the amount of rainfall in each of the months of April, July, and September in 1921 was comparatively large and that for June and August was light. The total amount of rainfall for the six months in 1921 was 3.62 inches above the average of the past twenty-two years. This increased amount was made up largely in July when there were two or three exceptionally heavy rainfalls.

The August bulletin of the Statistics and Publications Branch of the Ontario Department of Agriculture reports that the rainfall throughout Ontario for the five months, from March to July inclusive, was 15.35 inches or 2.28 inches above the normal of the average of the last thirty-nine years. April and July were in excess, while May and June were below their respective averages.

Results of Co-operative Experiments.

The co-operative experimental work with farm crops has been entirely voluntary on the part of the experimenters. The tests are conducted by the farmers themselves through the helpful co-operation and guidance of the Agricultural Committee of the Experimental Union. Voluntary co-operation has apparently been the secret of the success of this work.

The reports of the co-operative experiments for 1921 which were received at the College were submitted to a very critical examination as in former years. For the summary report which is here presented only those individual reports which showed carefulness and reliability in all the essential features were used. We ask that any of those at this meeting who would like to look over these reports do so as they are all here on the table whether they represent the successfully or the unsuccessfully conducted tests. We should remember that there are a very large number of men now located on farms throughout Ontario who are really excellent experimenters. Many of them combine practical experience on the farm, good education, and a substantial training in experimental work as they have conducted successful tests on their own farms in each of a number of years. Many of the reports not included in the summary, owing to a slight change in the size of the plots or to some unavoidable accident, may be exerted a valuable individual influence in furnishing an object lesson to the experimenters and to others and, in some cases, in furnishing good pure seed of better varieties than were on the farm previously.

Grain Crops.

The following gives the summary results in tabulated form of the varieties of grain crops tested throughout Ontario in 1921:—

Experiments	Varieties.	Yield per acre.		
		Straw (tons)	Grain (bush.)	Grain (lbs.)
Oats (10 tests)	O.A.C. No. 72	1.56	41.04	1395
	O.A.C. No. 3	1.48	39.18	1332
	Liberty (Hulless)	1.36	28.09	955
Six-rowed Barley (3 tests)	O.A.C. No. 21	.80	20.00	960
Emmer (3 tests)	Common Emmer	.96	16.67	800
Hulless Barley (7 tests)	Guy Mayle	1.84	24.81	1489
	Black Hulless	1.82	23.15	1389
Spring Wheat (2 tests)	Wild Goose	1.07	15.67	940
	Marquis	.82	10.67	640
Winter Wheat (13 tests)	Improved Dawson's Golden Chaff	1.96	27.72	1663
	O.A.C. No. 104	1.78	27.53	1652
	Improved Imperial Amber	1.90	27.52	1651
	Yaroslaf	2.04	21.94	1316
	Kharkov	1.69	21.80	1308
Winter Rye (2 tests)	Winter Rye	.92	28.76	1610
Winter Wheat (2 tests)	Winter Wheat	1.68	23.67	1420
Field Peas (14 tests)	O.A.C. No. 181	1.96	26.31	1579
	Early Britain	2.00	22.67	1360
	Potter	1.97	22.59	1355
	New Canadian Beauty	2.22	21.88	1313
Field Beans (14 tests)	Pearce's Improved Tree	.87	26.39	1583
	Michigan No. (630425)	.81	25.52	1531
	American Wonder	.76	24.21	1453

In the first column of figures, the yield of straw per acre represents the total crop less the amount of grain and therefore includes the chaff with the straw. In the second column, the yield of grain is given in bushels and, in the third column, in pounds per acre. This is done to make the results more clearly understood as a number of the classes of grains have different standard weights per measured bushel.

Varieties of Oats. Three varieties of oats were used in the co-operative experiments in 1921. The O.A.C No. 72 and the O.A.C. No. 3 have been used in each of the past nine years and the Liberty oat, a new hulless variety originated by Dr. C. E. Saunders, Central Experimental Farm, Ottawa, was used in the co-operative tests for the first time. This variety of hulless oats has given better results than any other variety of hulless oats which we have tested at the College. The tabulated results show that the Liberty oat gave 955 pounds per acre in comparison with 1,395 pounds for the O.A.C. No. 72. It should be noted, however, that in the average of fifteen years' experiments, the O.A.C. No. 72 had 28.3 per cent. of hull. If we add this amount of hull to the average yield of the hulless variety, we would find that there is still an average yield of about 170 pounds per acre more from the O.A.C. No. 72 than from the hulless variety as the result of the co-operative experiments for 1921.

The following table gives the average yield per acre of all the co-operative tests with each of two varieties of oats in each of the past nine years, also the average results of 644 successfully conducted tests throughout the Province for the nine-year period:—

Varieties	Average Yield of Oats per Acre (Bushels by Weight)									
	1913	1914	1915	1916	1917	1918	1919	1920	1921	Average 9 years
O. A. C. No. 72....	52.1	52.4	52.9	47.0	45.9	54.2	41.5	50.5	41.0	48.6
O. A. C. No. 3.....	43.3	49.0	49.1	45.6	41.2	46.1	38.9	41.6	39.2	43.8

Without an exception the O.A.C. No. 72 variety surpassed the O.A.C. No. 3 variety of oats in yield of grain per acre. One of the great advantages of the O.A.C. No. 3 variety, however, is the fact that it is about ten days earlier than the O.A.C. No 72 or the Banner. There is no variety of oats grown as a field crop in Ontario which has as thin a hull as the O.A.C. No. 3.

As the two varieties of oats most extensively grown in Ontario at the present time are the O.A.C. No. 72 and the Banner, it is interesting to study the comparative results of these two varieties and also to compare the results of the O.A.C. No. 3 with the Daubeney which is a very early variety.

The following table gives the average of fifteen years' results of these four varieties of oats as tested in the experimental grounds of the Ontario Agricultural College:—

Varieties	Days to Mature	Percentage of Hull	Yield per Acre	
			Straw (tons)	Grain (bush.)
O. A. C. No. 72	110	28.3	2.20	83.98
O. A. C. No. 3	100	24.0	1.90	83.50
Banner	110	30.2	2.10	74.15
Daubeney	103	25.1	1.89	72.79

It is interesting to note that the grain of the O.A.C. No. 72 variety has taken the Sweepstakes prize at the Ontario Provincial Winter Fair in each of the past six years.

O.A.C. No. 21 Barley and Common Emmer. Of all the different varieties of barley the O.A.C. No. 21 has given the best satisfaction at the College and throughout Ontario and is now grown to the exclusion of practically all other varieties in the Province. Common Emmer has been extensively advertised and has proven to be a large yielder of grain and, in fact, in experimental work it has shown itself to be a competitor with the leading varieties of barley and the leading varieties of oats in grain production.

The O.A.C. No. 21 barley surpassed the Common Emmer by an average yield of 160 pounds per acre in 1921. As these two grains have been used in the co-operative experiments in each of the last nine years during which time there were 118 successfully conducted tests, it was found that the average yield of grain per acre was 1,596 pounds for the O.A.C. No. 21 barley and 1,349 pounds for the Common Emmer. The barley, therefore, gave an average yield of 247 pounds per acre over that of the Emmer.

Hulless Barley. In the co-operative experiments throughout Ontario, the Guy Mayle variety of hulless barley surpassed the Black Hulless variety in average yield of grain per acre by 1.6 bushels in 1921 and by ½ bushel in the average of the past eighteen years. While there is not a very great difference between these two varieties in yield per acre, the greatest evidence is in favour of the Guy Mayle variety. This variety is also a little stiffer in the straw than the Black Hulless. The last named variety is the one which has been used most extensively in Ontario in years past. Many farmers who wish to grow hulless barley, might to advantage use the Guy Mayle variety.

Spring Wheat. The Wild Goose spring wheat gave an average yield of five bushels per acre over the Marquis in 1921 and of nearly six bushels per acre in 1920. In the average of the past nine years in which co-operative experiments with these two varieties have been successfully conducted on 126 Ontario farms, the Wild Goose gave an annual yield of 20.1 and the Marquis of 18.2 bushels per acre. It should be very carefully noted however, that the Marquis variety is well suited for bread production while the Wild Goose is a macaroni wheat and is not so well suited for the production of flour for bread making.

Winter Wheat. Although the Improved Dawson's Golden Chaff gave an average yield of twelve pounds of grain per acre more than the O.A.C. No. 104 in 1921, the majority of experiments in the last five years have been in favour of the O.A.C. No. 104 variety. The average of the five years' tests, in which there were 117 successfully conducted experiments, shows the O.A.C. No. 104 to give 27 and the improved Dawson's Golden Chaff 26 bushels per acre. These were followed by the Imperial Amber 25.4; Kharkov, 22; and Yaroslaf, 21 bushels per acre.

The O.A.C. No. 104 was originated at the Ontario Agricultural College by crossing the Dawson's Golden Chaff and the Bulgarian varieties. It is a white wheat with a white chaff similar to the Bulgarian and has a beardless head similar to the Dawson's Golden Chaff. It is more vigorous in growth and has killed out less in the winter than either of its parents.

Winter Rye and Winter Wheat. In each of six years, a leading variety of winter rye and a leading variety of winter wheat have been compared with each other for productiveness in the co-operative experiments. In 1920 and in 1921, the Rosen rye and the O.A.C. No. 104 winter wheat were the ones used and in the years 1915, 1916, 1918, and 1919 the Petkus rye and the Imperial Amber winter wheat were the varieties incorporated in this test. In the average results in pounds of grain per acre, it was found that the winter rye gave a greater yield than the winter wheat by 190 pounds in 1921, and by 357 pounds per acre in the average of six years. Without one exception, the winter rye surpassed the winter wheat in yield of grain. It has been found in the experiments at the College over a long period of time that the varieties of winter rye are more hardy than even the hardiest varieties of winter wheat which have been under test.

Field Peas. For six years in succession, the same three varieties of field peas have been used in the co-operative experiments. The average for the six year period shows an annual yield of grain per acre of 24 bushels for the Potter and the Early Britain, and of 23.2 bushels for the Canadian Beauty. In 1921, the O.A.C. No. 181 was entered in the co-operative tests for the first time. The foregoing tabulated results show that this new variety has made a high record, giving an average yield of nearly four bushels per acre over any other variety. This new pea was originated at the College through hybridization.

Field Beans. In 1921 as in 1920, three varieties of beans gave average results in yield per acre over Ontario in the following order: Pearce's Improved Tree, Michigan No. 630425, and American Wonder. The average yield of the Pearce's Improved Tree bean over the Michigan variety is about one and one-half bushels per acre. The Pearce's Improved Tree bean requires a little longer season of growth than the Pea bean. In those localities, however, where it can be grown successfully, it produces a high yield of large white beans of excellent quality.

Grains Grown in Combination for Grain Production.

Several experiments have been conducted at the Ontario Agricultural College within the last twenty-five years in growing grains in different combinations for grain production. In 1921, the only cereals which occupied a greater area than the mixed grains in Ontario were oats and winter wheat. It will, therefore, be seen that the growing of grains in definite combinations is occupying an important place in crop production in the Province of Ontario.

For six years in succession, an experiment was conducted at the Ontario Agricultural College by growing oats, barley, spring wheat, and peas separately and in various combinations for the production of grain. There were six mixtures having two classes of grain; four, having three classes; and one, having four classes of grain in combination. This made in all eleven mixtures besides the four grains grown separately, forming in all fifteen plots. The experiment was conducted in duplicate each year for six years, making a total of 180 plots. Of all the mixtures used, barley and oats gave the highest returns and this combination produced 193 pounds of threshed grain per acre more than the highest yielding grain when grown alone.

Some farmers have been under the impression that if a comparatively small quantity of rye, goose wheat, peas or flax was added to a mixture of oats and barley, they would receive in the resultant crop not only as large a yield of oats and barley as if these two grains had been grown without any additional seed, but that they also would obtain a fair yield of rye, goose wheat, peas, or of flax in addition. Results of numerous experiments at the College have shown that this has not been the case and that so far no additional grain of any kind has been used with a standard mixture of barley and oats which has not caused an actual reduction in the total yield of grain per acre.

In the spring of 1918, a co-operative experiment was started in order to ascertain whether an addition of one-half bushel of Goose Wheat or one-half bushel of Golden Vine peas to a mixture of one bushel of oats and one bushel of barley would be of any advantage in giving a larger yield throughout Ontario. No results of co-operative experiments were obtained for that year. The following table gives the average results of similar experiments as here described conducted over Ontario in each of the past three years:—

Mixtures	Yield of Straw per Acre (tons)				Yield of Grain per Acre (pounds)			
	1919	1920	1921	Ave.	1919	1920	1921	Ave.
Oats 1 bushel, Barley 1 bushel..	1.24	1.70	1.35	1.43	1,473	2,240	1,223	1,645
Oats 1 bushel, Barley 1 bushel Golden Vine Peas ½ bushel...	1.16	1.77	1.36	1.43	1,310	2,148	1,062	1,507
Oats 1 bushel, Barley 1 bushel Goose Wheat ½ bushel.....	1.21	1.71	1.35	1.42	1,398	1,993	1,121	1,504

It will be observed from the tabulated results that the oats and barley alone produced a greater yield of grain per acre than when either Golden Vine peas or Goose Wheat was added to this mixture. These results are quite consistent with those obtained at the College through more complicated experiments and extending over a much longer period of time. When a high yielding variety of oats and a high yielding variety of barley are sown at the rate of one bushel (34 pounds) of the former and one bushel (48 pounds) of the latter or a total of 82 pounds of the mixture per acre, a high yield may be expected. It is important, of course, to use varieties which will mature at the same time and, when this is done, it seems very difficult to get any of the small grains whether grown separately or in combination that will produce as high a yield per acre as a suitable mixture of oats and barley.

Varieties of Corn for Husking.

Two separate sets of corn experiments were conducted previous to 1916. Each set consisted of a small number of varieties. The one was used for grain production and the other was studied from the standpoint of fodder. In 1916, a co-operative experiment was started in the testing of the seven varieties of corn recommended by the Ontario Corn Growers' Association. This experiment has been conducted for six years and includes in all thirty-six separate tests of the whole crop and twenty-four of the shelled grain. The following table gives the average yield of total crop and of grain per acre of each of the seven varieties of corn tested in Ontario in 1921 and in the average of the past six years:—

Varieties	Average Yield per Acre			
	Whole Crop (tons)		Grain (bush.)	
	1921	Average 6 years 36 tests	1921	Average 6 years 24 tests
Golden Glow	14.50	10.43	107.46	71.97
White Cap Yellow Dent	14.22	9.86	92.86	64.55
Wisconsin No. 7	15.90	11.01	90.50	63.14
Bailey	15.40	9.84	99.51	62.89
Longfellow	14.56	9.51	93.89	59.99
Salzer's North Dakota	13.50	9.05	94.83	58.10
Compton's Early	9.00	8.73	75.86	55.63

The Golden Glow gave the highest yield of grain per acre in each of five out of six years. This variety has done particularly well as it has not only given a large yield of grain but also stands well up in the list in comparative yield of total crop, being surpassed in this respect only by the Wisconsin No. 7 in the average of the six years. The four varieties which have given the highest average yields of grain per acre are dents and the three varieties which have given the lowest yields are flints. It will be observed that in 1921 the yields are particularly high, the Golden Glow giving a little over 100 bushels and six of the seven varieties giving over 90 bushels per acre.

Field Roots.

In 1921 co-operative experiments were conducted with mangels, sugar mangels or sugar beets for feeding purposes as they are sometimes called, swede turnips, fall turnips, and carrots. There were twenty-four good reports of successfully conducted tests with field roots in the past year, including eight for mangels, five for sugar mangels, two for swede turnips, and nine for carrots.

The average results of the good reports of the successfully conducted tests with field roots are presented in the following table:—

Experiments	Varieties	Yield per Acre (tons)
Mangels	Sutton's Mammoth Long Red	27.43
	Keith's Prize Taker Yellow Globe	24.21
	O. A. C. No. 2 Strain Yellow Leviathan	23.56
Sugar Beets	White Silesian	27.48
	Bruce's Giant White Feeding	24.95
Swede Turnips	Steele, Briggs' Good Luck	29.60
	Ne Plus Ultra	27.90
	Garton's Superlative	24.20
Carrots	Simmers' Improved Giant Short White	18.87
	Rennie's Mammoth Short White	18.75

Varieties of Mangels. The three varieties of mangels tested in 1921 were also used in the co-operative experiments in the two years previous. In the average of twenty-three tests conducted within the three years, it was learned that the yield in tons of roots per acre was 32.2 for the Sutton's Mammoth Long Red, 29.9 for the Yellow Leviathan, and 28.8 for the Keith's Prize Taker. The first two varieties here named have been used in the co-operative tests for a good many years, in the majority of which the Yellow Leviathan has surpassed the Sutton's Mammoth Long Red. The Yellow Leviathan gave a much lower yield than usual in the past season.

Sugar Mangels. The names, sugar beets for feeding purposes, and sugar mangels, refer to the same class of roots which are intermediate between mangels and the true sugar beets. In most instances, mangels have about five per cent., sugar mangels about ten per cent. and sugar beets about sixteen per cent. of sugar. The sugar mangels grow more out of the ground than sugar beets and are more easily harvested but generally yield somewhat less than the mangels. In the co-operative experiments for two years, the White Silesian variety of sugar mangels gave 23.4, and the Bruce's Giant White Feeding, 22.6 bushels per acre.

Swede Turnips. The Steele, Briggs' Good Luck variety heads the list this year by nearly two tons per acre over Ne Plus Ultra and by fully five tons per acre over the Gartons' Superlative. In 1920, the Gartons' Superlative gave a very slight increase in yield over the Ne Plus Ultra. The latter, however, has shown itself to be a root of very excellent quality.

Field Carrots. In the average of two years' results Rennie's Mammoth Short White carrot gave 19.7 and Simmers' Improved Giant Short White 19.1 tons per acre. The intermediate white field carrots offered by different seedsmen under different names usually resemble each other very closely in appearance and there appears to be more difference in the quality of the seed than in the so-called varieties.

Dates of Planting Sweet Corn.

Upwards of fifty varieties of sweet corn have been tested at the College and only a very few of the best of these have been entered into the co-operative tests Those which have been used most extensively have been the Golden Bantam, The Stowell's Evergreen, The White Cory, and the Malakhoff. Of these varieties the Golden Bantam was reported each year as the most desirable for home use. In

each of six years previous to 1920 only two varieties were selected for distribution, namely:—the Golden Bantam of the early and the Stowell's Evergreen of the late. The Golden Bantam proved more popular with the experimenters and produced a greater number of ears of corn of better quality than the Stowell's Evergreen variety. The former variety is also about ten days earlier than the latter. The Golden Bantam variety is now grown quite extensively throughout Ontario. In each of the past two years a co-operative experiment has been conducted in planting the Golden Bantam sweet corn on three different dates. The seed was sent from the College and each experimenter was advised to plant the corn on three different dates, allowing two weeks to remain between each two dates of planting. The following gives the average results of nine co-operative experiments for 1920 and of fifteen for 1921.

Dates				Number of Good Ears from 50 hills	
Planted		Ears ready for use			
1920	1921	1920	1921	1920	1921
May 19th	May 16th	Aug. 18th	Aug. 4th	166	155
June 2nd	May 28th	Aug. 29th	Aug. 15th	161	164
June 15th	June 7th	Sept. 10th	Aug. 25th	143	150

It will be seen that the average date on which the experimenters started to plant was May 19th in 1920 and May 16th in 1921. Although the average planting took place only three days earlier, the corn was ready for use two weeks earlier in 1921 than in 1920. Very good results were obtained in number of good ears from each of the three dates. Golden Bantam corn may be planted at a number of different dates and the season in which it can be used for table purposes can thus be extended even beyond the limits indicated in this experiment. It is generally wise to make the first planting of Golden Bantam corn quite early in the spring, even though there is still some risk from frost. If the young plants are not injured, the season for corn for table use is considerably extended.

Varieties of Potatoes.

The yield of potatoes is influenced by many causes, such for instance, as variety, season, amount of seed planted, fertility of the soil, amount of disease, etc. Variety is the important factor not only as it relates to the yield and the quality of the potatoes but also as to the furnishing of a large supply of uniform potatoes which readily meet the demands of the market. There have been entirely too many varieties of potatoes grown in Ontario. We believe, however, that the number is gradually decreasing and in the last few years special emphasis has been placed upon the Irish Cobbler of the early and upon the Green Mountain or the Rural New Yorker No. 2 of the late varieties.

For the co-operative experiments, it was decided to distribute only two varieties of potatoes in the spring of 1918, namely, Irish Cobbler and Green

Mountain. These two varieties have now been distributed in each of the past four years. In 1921, eighty-one separate tests were carefully carried out with these two varieties. The following table gives the average results of this experiment in each of the past four years and for the whole period.

Varieties.	Results of Co-operative Tests								
	Percentage Rotten Potatoes		Percentage Small Potatoes		Average Yield of Total crop per Acre (bush.)				
	1921	Average	1921	Average	1918	1919	1920	1921	Ave.
Irish Cobbler.....	.001	.6	12.7	13.6	134.3	111.1	271.5	153.4	167.6
Green Mountain....	.005	1.2	10.6	11.5	129.5	132.5	301.5	176.1	184.9

In 1918, the Irish Cobbler gave a greater yield per acre than the Green Mountain. In each of the other three years, however, the late variety proved to be the most productive. In the average results for the whole period, comprising 493 tests, the Green Mountain surpassed the Irish Cobbler by 17.3 bushels per acre per annum. For this experiment great care was taken each year to secure seed potatoes which were as free from disease and as true to type as possible.

Northern and Southern Grown Seed Potatoes.

For seven years in succession, an experiment was conducted at the College in testing seed potatoes obtained from different sources, mainly from southern Ontario, northern Ontario, and New Brunswick. Seed potatoes obtained 140 miles north of Guelph in the Muskoka District near the Muskoka Lakes gave much higher yields per acre than those obtained from southern Ontario and slightly higher than those obtained from New Brunswick. More recently potatoes have been obtained from Rainy River, Algoma, and Thunder Bay districts, and these have given good results for seed purposes. Whether the good returns are caused by the immaturity of the seed or from the greater freedom from disease of the northern grown potatoes, is now receiving special attention.

In 1921, two varieties of potatoes were obtained from southern Ontario and also the same varieties from northern Ontario and these were carefully tested in a co-operative way throughout the Province. There were in all forty-nine good reports of successfully conducted experiments. As this is the fourth year of the test, the following table gives the average results for each of the years 1918, 1919, 1920, and 1921, and also for the four year period which includes in all 281 separate tests:—

District	Average Yield of Potatoes per Acre (bush.)				
	1918	1919	1920	1921	Average
Northern Ontario.....	142.8	134.6	292.6	168.1	184.5
Southern Ontario.....	123.9	128.5	279.8	163.9	174.0

In each of the past four years, the northern grown seed potatoes produced a higher yield per acre than the seed which was secured in southern Ontario. In all instances, the best seed available was obtained. The average results for the four years' test show that the northern grown seed gave 10.5 bushels per acre per annum more than that obtained from the southern seed.

Fertilizers and Manures with Farm Crops.

For the past thirty-five years, co-operative experiments with manures and fertilizers with farm crops have been conducted throughout Ontario. For the first five years, however, the results were somewhat of a preliminary nature. Since 1889 experiments have been conducted under a general scheme and much valuable information has been secured. The results of experiments conducted through the medium of the Experimental Union in past years may be secured in booklet form by writing to the Experimental Union Secretary, Agricultural College, Guelph.

In 1920 co-operative experiments were conducted with manures and fertilizers on winter wheat and on oats. The co-operative tests with manures and fertilizers with winter wheat belong to a series of tests started many years ago and which include not only winter wheat but also oats, fodder corn, mangels, swede turnips and potatoes. In one set of tests, the application of manures and fertilizers with winter wheat was made in the autumn and in another set of tests, they were made in the spring. The co-operative work in the past year has been the application of manures and fertilizers in the spring to the winter wheat crop.

For the co-operative experiments the fertilizers and seeds have been sent from the College to experimenters each year. In all instances in the experiment the Nitrate of Soda and the Muriate of Potash were applied at the rate of 160 pounds per acre, and the Superphosphate at the rate of 320 pounds per acre. A mixture of complete fertilizer was composed of one-third the amount of each of these fertilizers and was, therefore, applied at the rate of 213⅓ pounds per acre. As early in the spring as the land was dry enough the fertilizers were made into a powdered condition by breaking any lumps which had been formed and were applied to their respective plots. The advice to the experimenters was to apply 500 pounds of average cow manure on one plot in each test, the application being equal to twenty tons per acre. The cow manure and the fertilizers were used as a top dressing. The following table gives, not only the average results of fertilizers and manure applied in the spring with winter wheat, but also fertilizers applied with a number of other farms crops.

Kind of Fertilizer used	Fertilizer per Acre		Average Yield per Acre							
			Oats	Fodder Corn		Mangels	Swede turnips	Potatoes	Winter Wheat	
				Total	Ears				Fertilizer applied	
									Autumn	Spring
	Exact Wt.	Approximate Cost before the war	5 yrs. 74 tests	8 yrs. 47 tests	8 yrs. 41 tests	5 yrs. 41 tests	5 yrs. 18 tests	5 yrs. 98 tests	8 yrs. 22 tests	4 yrs. 9 tests
	lbs.	$ c.	bush.	tons	tons	tons	tons	bush.	bush.	bush.
Nothing	.....	.....	38.9	8.2	2.7	20.6	19.6	129.2	18.9	19.1
Nitrate of Soda	160	4.80	46.3	9.4	3.1	26.5	22.5	153.4	22.7	23.9
Muriate of Potash	160	4.00	43.8	9.4	3.0	24.6	23.7	160.8	22.3	25.3
Superphosphate	320	3.92	43.6	9.0	3.1	24.2	24.7	156.8	22.4	25.5
Complete Fertilizer	213	4.24	48.7	9.4	3.2	25.4	25.0	166.3	24.1	25.2
Potato Fertilizer	320	5.52	.....	.....	.....	.....	.....	167.5	.....	.....
Royal Canadian	320	5.60	.....	.....	.....	.....	.....	164.5	.....	.....
Cow Manure	40,000 (20 T.)	6.00	.....	.....	.....	.....	26.9	174.7	26.3	24.2

The cost of each fertilizer given in the table represents approximately under normal conditions, previous to the war, the average cost per acre for the fertilizers as used in the co-operative experiments. The quotations were based on the factory prices for quantities of about one ton of each fertilizer. The twenty tons of cow manure would be about twelve good sized loads per acre, and manure in Guelph has been selling at fifty cents per load, which is probably about the average for the province. It is exceedingly difficult to place a price on farmyard manure as, in most cases it is not purchased, but is produced on the farm. Each person may place such value on the manure as he deems expedient and study the results according to his own circumstances. It should be stated that the freight on the fertilizers and the application of both the fertilizers and the manure are not taken into consideration in the foregoing statement, nor yet is there any account made of the influence of the different fertilizers and the manure upon the land after the first season, except in the later experiments. The results of fertilizers with farm crops over a series of years are studied in connection with the field experiments at the College.

Each experimenter was asked to conduct his fertilizer test on the average soil of his farm. The results here presented are, therefore, for the average soils of Ontario. On some farms the fertilizers paid much better than they did on others. Every farmer who uses fertilizer should know as much as possible about the requirements of his own particular farm. The results here presented speak in a general way regarding the use of these fertilizers under the varying conditions of the farm lands of the Province and should furnish valuable suggestions.

In the spring of 1920, arrangements were made for testing a low grade and a high grade commercial fertilizer with oats and with spring wheat. These crops were also grown on unfertilized land in each instance in order to form a better basis of comparison. The fertilizers and the grain were distributed from

the College for the various tests. In addition to this material, each experimenter was given the choice as to whether he would prefer seeding either class of grain with red clover or with the white flowering sweet clover. The object was not only to ascertain the influence of the fertilizers on the grain crop the first year but also to secure information as to the influence of the fertilizers on the red clover and the sweet clover in the year following. In 1921 this experiment was continued in a similar manner with oats but not with spring wheat. The number of experiments are quite limited and there is not as yet enough accumulated material to present a satisfactory report.

THE PRESIDENT: Regarding the hulless oat, does it waste much in harvesting?

DR. ZAVITZ: There is not much loss in harvesting, but there would probably be some difficulty in keeping a large bulk, say fifty or a hundred bushels in one bin. The oats have a comparatively large amount of oil or fat, and not having any hull they lie quite close together and might require occasional stirring. I doubt if the hulless oats will be grown in large areas. A small area may be used on each of a good many farms is the opinion of Dr. C. E. Saunders, Ottawa, who originated the Liberty variety of hulless oats.

THE PRESIDENT: What varieties of barley and oats do you recommend for the mixture?

DR. ZAVITZ: For five years we tested nineteen different varieties in studying this point. We find it is better to use an early variety of oats with an ordinary ripening barley, rather than a late barley and an ordinary oat. We have to be careful in selecting varieties. An early variety of oats, such as, the O.A.C. No. 3, Daubeney, or Alaska and either the O.A.C. No 21 or the Mandscheuri barley ripen together and give excellent results.

Q.—If you sow a bushel of each would that mean per acre?

DR. ZAVITZ: Yes, a bushel of each per acre which means a mixture of 34 pounds of oats and 48 pounds of barley, or a combination of 82 pounds of grain per acre.

Q.—In reference to potatoes, what district do you define as Northern Ontario?

DR. ZAVITZ: For the first experiment with northern grown potatoes, the seed was obtained from about 150 miles north of Toronto, but recently we have been testing potatoes secured from Rainy River, Sault Ste. Marie, Fort William and from other northern districts.

MR. WIDDIFIELD: Would it mean that if the O.A.C. No. 72 were hulled they would be less in pounds per acre than the hulless?

DR. ZAVITZ: The O.A.C. No. 72 variety has on the average about 28 per cent. of hull and, if we add that percentage on to the hulless, it is still less than the O.A.C. No. 72 by about 170 pounds. The actual yields show O.A.C. No. 72, 1,395 pounds and hulless 955 pounds per acre.

Q.—In comparing Irish Cobbler and Green Mountain potatoes, were they planted on the same date?

DR. ZAVITZ: They were planted on the same dates in the co-operative tests. In our more elaborate experiments at the College both varieties were planted on a number of different dates throughout the season starting early in the spring.

Q.—Have you compared the Irish Cobbler from early planting with the Green Mountain from later planting?

DR. ZAVITZ: Yes, we have planted both varieties on each of six different dates in each of the past four years. Two weeks were allowed between each two plantings. The earliest plantings with both varieties took place in the first week in May and the last about the middle of July. The highest average yield per acre from the Irish Cobbler and also from the Green Mountain was from the first date of planting and the yield per acre gradually decreased as the plantings became later in both cases, the lowest yield for each variety coming from the last date of planting.

Q.—Which class of barley gives better results, the bearded or the beardless?

DR. ZAVITZ: The highest results have been obtained from barley having beards. We have as yet found no beardless barley which has given as high a yield per acre as the O.A.C. No. 21. We have made crosses of these two classes and have originated a beardless barley superior to the old varieties but we are still aiming to get one which will prove more productive.

RESULTS OF FOUR YEARS' CO-OPERATIVE EXPERIMENTS WITH (DRY) FORMALDEHYDE FOR THE PREVENTION OF OAT SMUT.

J. E. HOWITT, PROFESSOR OF BOTANY, O. A. C. GUELPH.

At a very conservative estimate, based on the average annual value of the oat crop in Ontario, and the average reduction in yield due to oat smut, the loss caused by this disease to the farmers of Ontario is approximately three millions of dollars annually.

This is a needless loss as oat smut can be prevented cheaply and easily. The fact that oat smut can be prevented by seed disinfection has been known for many years but many farmers of the province have been slow to use the methods of prevention recommended on account of the time and labour involved.

The so-called dry formaldehyde treatment is so simple and involves so little labour that it should be readily adopted by the farmers of Ontario when it is proved to them that it is effective in the prevention of oat smut.

In order to prove the effectiveness of this dry formaldehyde treatment for the prevention of oat smut, co-operative experiments have been conducted for the past four years. These experiments were all carried on under ordinary farm conditions, most of them on farms in the County of Wellington, in the neighbourhood of the College. In all thirty-five field trials have been made and 2,122 bushels of oats treated. The varieties of oats treated included O.A.C. No. 72, Alaska, Banner, White Cluster, Mammoth Cluster and Siberian. The following is a summary of the results obtained in the four years experiments.

In 1918, 61 bushels of oats were treated; percentage of smut which developed in crop from treated seed 0, percentage of smut which developed in crop from untreated seed 6.5. In 1919, number of bushels of oats treated 630; percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.26. In 1920, number of bushels of oats treated 1,016; percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 2.36. In 1921, number of bushels of oats treated 415: percentage of smut in crop from treated seed 0, percentage of smut in crop from untreated seed 5.8.

The average for the four years shows no smut in crop from treated seed and 4.23 per cent. of smut in crop from untreated seed. Tests were also made to determine whether this treatment injured the vitality of the seed. In the four years experiments the average germination of treated and untreated seed was found to be exactly the same namely 97.5 per cent.

It is thus seen that the results have been uniformly satisfactory throughout the four years experiments. No injury to the vitality of the seed has resulted and the control of the smut has been almost perfect. In no case has there been more than a trace of smut in any of the fields sown with treated seed, while the amount of smut in the field sown with untreated seed for check averaged 4.23 per cent. In some of the checks there was over 15 per cent. of smut present. The advantages of this method over those which have been in general use heretofore are simplicity, rapidity and ease of application. In these experiments it was found that one hundred bushels of oats could be treated in fifty minutes by this method, and that there was no waiting for the seed to dry after treatment, or danger of the grain sprouting or moulding or being swollen so that it would not run freely through the drill.

Directions for the Dry Formaldehyde Treatment for the Prevention of Oat Smut.

Place the oats to be treated in a pile on the granary or barn floor and shovel them over into another pile, and as they are being shovelled over, spray them with a solution consisting of one part of formalin (40 per cent. formaldehyde) and one part of water. Use this solution at the rate of one pint to twenty-five bushels of seed oats, that is, use one-half pint of formalin mixed with one-half pint of water for every twenty-five bushels of oats. If smaller or larger quantities are to be treated, use proportional amounts of formalin solution, thus, twelve and a half bushels require one-quarter pint of formalin mixed with one-quarter pint of water. A small, quart, sealer sprayer costing about one dollar is the most convenient for spraying the solution on the oats. Two men can do the work best, one man to shovel the grain while the other sprays each shovelful.

Irritation to the eyes, nose and throat by the strong formalin fumes is the chief objection to this method, but it can be overcome by holding the sprayer down close to the grain and providing for a free circulation of air through the barn or granary when the solution is being applied. After the oats are all sprayed they should be piled in a heap and covered with blankets or sacks to confine the formalin vapor. The sacks or blankets used to cover treated grain should be first sprayed with strong formalin. Sacks should be sprayed both inside and out.

After five hours the seed should be uncovered and may be bagged and sown immediately. There will be no delay waiting for the seed to dry and no wet or swollen grains to choke the drill. It is advisable to sow the treated grain as soon after treatment as possible. In some of our experiments here at the College it was found that seed did not germinate quite so well when it was kept for several days before it was sown. However, some farmers with whom we co-operated kept their seed for three weeks after treatment before sowing it and no noticeable injury was observed.

PRECAUTIONS TO BE TAKEN TO ENSURE THE SUCCESS OF THE DRY FORMALDEHYDE TREATMENT FOR THE PREVENTION OF OAT SMUT.

1. Follow the directions carefully, being sure to use the exact strength and the exact proportions recommended.

2. Do not leave the treated seed covered for longer than five hours.

3. Take care that the treated seed is not re-infected with smut spores; sacks bins, implements, etc., used in handling the smutted grain should also be disinfected. The sacks should be dipped in, or sprayed with a strong solution of formalin and the seed drill should be cleaned and disinfected with formalin.

4. See that there is a good circulation of air through the granary or barn when the strong formalin solution is being applied.

The dry formaldehyde treatment is recommended for the prevention of oat smut only. Experiments conducted here at the College have shown that it is not safe for wheat or barley.

MR. SPENCER: Is there any danger if any stronger solution is used?

PROF. HOWITT: To be on the safe side, one should have proportions correct, but we have found that it can be applied in double this strength without doing any serious injury.

Q.—After being treated are the oats fit for feeding to stock?

PROF. HOWITT: When aired thoroughly so that you do not notice the formaldehyde fumes, they can be fed. The time will depend upon how much airing they have.

Q.—Would it be safe to treat a mixture of oats and barley?

PROF. HOWITT: You will find that this method will reduce the vitality of barley seed slightly but not very much. I would not recommend it for barley alone, but when oats and barley are treated together, it would not injure it to any appreciable extent.

Q.—Would the grain be immune for the following year?

PROF. HOWITT: That would depend entirely upon yourself. If you get all the smut out of your own crop, it would be all right, but not if you brought in other bags from other sources. Usually, one treatment in two or three years is sufficient, but you cannot depend on this when using a grain separator from some other farm. It is an insurance to treat every year.

Q.—Does smut produce itself or is it produced without smut?

PROF. HOWITT: Yes, it comes from outside sources through bags or through separators.

A MEMBER: My experience is that it is a method which induces farmers to practise treating, which up to the present they have not done to any great extent. There is only one thing which I have heard advanced against it as an objection, and that probably applies more to the west than to Ontario. Since it is not an effective treatment for wheat, a good many farmers where treating of wheat has become a practice may be tempted to try it, with unsatisfactory results, and I know one worker in the west who says he does not care to recommend it for that reason.

PROF. HOWITT: I think I made that point clear, that we recommend this for oats only and not for wheat. I know some men who used this method for wheat without injury, but it is not safe. It may be of interest to you to know that

there is another method we are working with this year to take care of wheat. We have just got the experiments started, but we hope by the method to be able to treat wheat successfully.

A BACTERIOLOGICAL ANALYSIS AND CO-OPERATIVE CULTURAL TESTS OF "NITRO-BACTER SOIL VACCINE."

DAN. H. JONES, PROFESSOR OF BACTERIOLOGY, O.A.C., GUELPH.

"Nitro-Bacter Soil Vaccine" is a liquid preparation recently put upon the market in U.S.A. and Canada and widely advertised as giving wonderfully increased crop returns when applied to the soil on which the crops are grown. It is claimed by its manufacturers to be a culture of bacteria, which on addition to the soil, *"attach themselves to the plant roots and draw nitrates and phosphates from the air and soil and act in place of fertilizers."*

As, during the early months of 1921 we received many letters of enquiry regarding this preparation, we obtained direct from the Toronto Branch of the firm that manufactures it, a gallon sample for analysis and test. The sample was from a lot manufactured on May 10th, 1921, and the tests here reported were commenced June 2nd. The sample was in a one gallon tin can tightly stoppered. On removing the stopper there was emitted a strong odor of H_2S. Lead acetate paper when placed in the neck of the can soon became blackened, thus confirming the presence of H_2S. The sample was a liquid of the consistency of water and on being poured into a glass container showed a blackish coloration due to the presence of small, black, flaky particles in suspension. Hanging drop and stained preparations showed various bacteria and protozoa present in the liquid. A portion of this sample was applied to various crops and a portion used for bacterial analysis.

The analysis included bacterial counts made on various agar media and cultural tests in various standard solutions for production of ammonia, nitrites and nitrates.

Coincident with the "soil vaccine" test we ran for purposes of comparison similar tests with a soil suspension made by adding one part of garden soil to two parts of sterile water, shaking and allowing the soil to settle and then using the supernatant liquid for cultural purposes.

The results of these comparative tests are as follows:

	"Soil Vaccine"	Garden Soil
Number of Decomposition Bacterial Colonies Growing on Beef-Agar Plates.	50,000 per c.c.	16,000,000 per gram.
Azotobacter Colonies (Nitrogen-fixing bacteria) Growing on Ashby's-Agar Plates.	1 in 3 c.c.	900 per gram.
Other Types of Bacterial Colonies on Ashby's-Agar Plates.	Numerous streptothrix. A few acid producers Few others undetermined.	Few streptothrix. Some legume bacteria. Many others undetermined.

From the above it will be seen that when comparing the bacterial content of 1 c.c. of the vaccine with that of 1 gram of ordinary garden soil, the decomposition bacteria were thirty-two times as many in the garden soil as were found in the "soil vaccine," and that the azotobacter or nitrogen-fixers, were twenty-seven hundred times more numerous in the garden soil than in the "soil vaccine."

Ammonification Test.

In this test a comparison was made in triplicate between the "soil vaccine" and the water suspension of garden soil for their power to ammonify gelatin solution (gel. 5 grams, water 1,000 c.c.). To each of these three flasks containing 100 c.c. of gelatin solution 5 c.c. of the "soil vaccine" was added and to each of a similar set of flasks 5 c.c. of the garden soil (equivalent to 2.5 grams soil) was added.

After four days a chemical test for ammonia was applied and this showed in the "soil vaccine" culture a slight amount of ammonia, while the garden soil culture showed heavy ammonia production. Two days later a similar test was applied which showed moderate amount of ammonia for the vaccine culture and very heavy ammonia for the garden soil culture. These results tally with the bacterial counts made on the beef agar plate cultures, the slow production of ammonia in the "vaccine" flask cultures agreeing with the small number of decomposition bacteria found in the "vaccine" plate cultures, while the rapid ammonia production by the garden soil flask cultures corresponds to the large number of decomposition bacteria found on the garden soil plate cultures.

Nitrification Tests.

A. *Formation of Nitrites.*

Comparison tests were made in triplicate between the "soil vaccine" and the water suspension of garden soil to form nitrites in a solution made for nitrite production. (Medium 26, Soil Bacteriology, Fred).

To each of three flasks containing 50 c.c. of the solution 0.5 c.c. of "soil vaccine" was added and to each of a similar set of three flasks was added 0.5 c.c. of garden soil suspension (equivalent to a quarter of a gram of garden soil).

After six days a chemical test for nitrites was applied with the following results:

"Soil vaccine" cultures showed no nitrite production; garden soil cultures showed moderate amount of nitrites present. After twelve days the same test was again applied when it was found that a trace of nitrites was present in the "soil vaccine" cultures while a heavy nitrite content was found in the garden soil cultures.

B. *Production of Nitrates.*

For this test 0.2 c.c. of the "soil vaccine" was added to each of three flasks containing 50 c.c. of a solution prepared for the formation of nitrates (Medium 28, Soil Bacteriology, Fred) and the same quantity of garden soil suspension, equivalent to 0.1 gram of soil, was added to a similar set of flasks.

After two weeks' incubation at 25° C. the phenoldisulphonic acid test showed a small amount of nitrate in the garden soil cultures but none in the "soil vaccine" cultures. After four weeks nitrates were present in both sets but stronger in the garden soil than in the soil vaccine cultures. After six weeks nitrates were present in about equal quantities in both sets of cultures.

Crop Tests.

Crop tests were conducted with corn, cabbage, cauliflower, tomatoes and strawberries. In each case a row twenty feet long was treated with the soil vaccine and four feet distant were untreated control rows. The treatment consisted in

giving, according to directions, a good sprinkling of the vaccine at the time of planting or sowing and repeating about one month later. A sprinkling with tap water was given to the untreated rows previous to applying the soil vaccine to the treated rows. In case of the corn a light application of barnyard manure was turned in to the control row before sowing.

Observations on development were made from time to time until the crops were harvested, but at no time was there seen to be any superiority of the vaccinated crop over the unvaccinated. In case of the corn the control row, which had the manure applied, showed at an early date a more vigorous development than was the case with the vaccinated row. This superiority was maintained until the end of the season.

Conclusions.

A consideration of the results of our bacterial analysis and crop tests with "Nitro-Bacter Soil Vaccine" shows that for increasing the ammonifying, nitrifying and nitrogen-fixing bacterial content of an average garden soil the "soil vaccine," if the sample forwarded to us is a representative sample, was of no value, and that its application to garden crops was not followed by any increase of growth or other improvement over the untreated crops.

When the report of our analysis and test was forwarded to the manufacturers, they acknowledged the accuracy of our findings but claimed that the sample which they had sent us for analysis had unfortunately not been a representative sample. So far, however, we have not received further samples for testing.

REPORT OF CO-OPERATIVE COMMITTEE ON CONVENIENCES AND WATER SUPPLY IN THE FARM HOME.

R. R. Graham, Lecturer in Physics, O. A. C., Guelph.

The Department of Physics co-operating with the Experimental Union has been conducting for the last year studies and investigations of the following subjects:—The farm water supply, its protection against contamination, modern water systems for the farm homes, the hydraulic ram, farm plumbing and plumbing fixtures, and sewage disposal. In addition we have started an educational campaign in the interests of farm home conveniences. The nature of the work in regard to each of these problems and the results obtained to date are briefly outlined herewith as follows:—

1. Farm Water Supplies.

As the years pass, the water supply problem is becoming more and more acute in many parts of Ontario. Naturally this condition obtains in districts where shallow wells prevail. The reasons for the failure of the supplies are,—deforestation, better drainage of farm lands and highways, reclamation of old inland ponds, bogs and swamps, and the use of more water for the family and the stock now than in the earlier days of the country. When our province becomes more thickly populated, as we hope it will, and when all the farm homes and stables are equipped with water systems, the problem will be still more acute unless the present supplies are increased by making the old wells

deeper or sinking new ones into good water-bearing formations at lower levels. In addition to this problem of water shortage there is the more serious fact that the present supplies are badly polluted in certain sections of the country. The two difficulties, namely, shortage and pollution, in some cases at least, will in all probability be eventually overcome by the same method, namely sinking deeper wells.

Where to drill and how deep to drill is the question of the farmer. Drilling is expensive and the farmers rightly want some assurance as to probable supply and depth to go before undertaking the sinking of deep wells. The electric water finder we purchased and tried out in Ontario a few years ago was not a success, and for the time being has been abandoned. Still believing that there must be some means of assisting the farmers to find more and better water, the Department of Physics is co-operating with the Department of Geology at Toronto University, and of the Bureau of Mines, Ottawa, with the hope that the experts in Geology who know considerable about the soils and rocks and water-bearing strata underlying our province may be able in time to render our farmers valuable service in locating better supplies of water. At the present time the matter is under discussion and in another year we will be able to tell you whether or not these Departments have decided to undertake the task. It would appear at present that the Geologists can help in some parts at least. Considerable work of this nature has been done in the United States, and North West Territories.

In the last few years our Department has received a great many enquiries for assistance to find water, but in the main we could give only general advice, which was not satisfactory to them nor ourselves. We felt that the need for water was greater than our list of enquiries would indicate, or would be in the near future, but to make sure of our conviction before taking up the matter with the geologists, we addressed a circular letter to the Agricultural Representatives asking for their opinion as to the need in their respective counties. To date we have received answers from thirty-six of the fifty written and twenty-one of the thirty-six or fifty-eight per cent. have replied that the need is great enough to warrant special effort being made to secure purer and larger supplies. These men are in a position to know and this is their verdict. Many of their replies are very interesting and instructive.

We believe that cisterns for rain water should be made greater use of on the farms, and we are emphasizing this fact whenever we can. In fact in a few districts of Ontario, the rain water is the main source of water supply.

2. Protection of the Water Supplies Against Contamination.

By direct observations of the condition of many farm wells, by reports of the Provincial Boards of Health and also by letters and questionnaires we are convinced that wells are usually contaminated by surface washings getting in at the mouth of the wells. Either bad location, that is, the well on lower ground than some source of contamination, poor drainage away from top of well and a loose open top, or all three combined are the causes for the entrance of the contamination. Suggestions for remedying these bad conditions of the wells are disseminated freely through bulletins and otherwise, and we have prepared blue prints giving details of properly protected wells and springs for distribution on request.

3. Modern Water Systems for Farm Homes.

Following the wake of gas engines and electricity on the farms, there has come upon the market in rapid succession a great variety of mechanical water systems suitable for all possible conditions on the farms. In order to become very familiar with all these systems and the conditions for which each is best adapted we secured the loan of one of each kind and these—some ten or twelve—are at present set up in our demonstration laboratory in the Physics Building. Names of users of each system have been secured and a questionnaire has been forwarded to them seeking information about their system. Besides, much useful information regarding costs, installation, etc., is being gathered from the manufacturers, jobbers and plumbers in various centres. The results of this special work will in the near future be incorporated in a new bulletin on equipment of farm homes. The Department appreciates very highly the great kindness and valuable assistance rendered by the manufacturers and other dealers in this work. The cost of water systems ranges from about $100.00 to $350.00 for shallow well outfits, and considerably more for deep wells. These figures do not include piping through the house, nor faucets etc.

4. The Hydraulic Ram.

The investigation in this connection during the past year has consisted mainly in securing data of actual installations in operation and making surveys and preparing plans and assisting in installing new outfits. Many good photographs were secured of the new installations. All of this information will be invaluable for lecture work, answering the enquiries about the hydraulic ram and assisting us in laying out and installing new outfits in the future. After this season's work on the hydraulic ram we are more convinced than ever before, that this machine is exceedingly practical and useful for pumping water where the proper conditions exist for its operation. We are also convinced that it might be used more than it is, especially in those districts where the topography of the country is uneven and many good springs abound. The ideal water system with the hydraulic ram is to put a small tank in the top of the house and have the hydraulic ram pump the water from the spring into this tank—a constant flow being maintained—and provide an overflow pipe from the top of the tank to another storage tank in the barn. From the tank in the barn the water gravitates to the small regulating tank on the floor of the stable and thence to the trough or basin in front of the cattle. The storage tank in the barn must also have an overflow pipe to take care of the excess water.

This arrangement provides the house with the coldest and freshest water. The main cost of the hydraulic ram installation is the piping, the ram itself not exceeding $30.00 in most cases.

5. Plumbing and Plumbing Fixtures.

Until such time as the farmers secure a better supply of water, and by some system have running water in their homes they will not be much interested naturally, in the matter of plumbing. At the present time it is a very strange thing to the majority of the farmers, for not more than one out of every ten on the average has a bathtub in his home or knows anything about plumbing or plumbing

fixtures. If they can be induced to install a water system, the majority will soon put in the fixtures. Therefore running water in the farm homes is the first and most important step.

In the meantime, however, it will be very necessary to keep the matter of plumbing prominently before the farmers, and use every possible means and opportunity to instruct them in regard to its nature and use. We must make them feel that it is a very necessary part of their home equipment—not a city matter alone—and if installed, that they should understand it as well as other equipment about the place.

We have looked carefully into the matter of the cost of a standard plumbing system including fixtures suitable for at least eighty per cent. of the farm homes. A summary is given herewith as follows:—

1.	Fixtures	Bathtub with trimmings	$58 00
		Bathroom sink "	25 00
		Closet	35 00
		Kitchen sink	25 00
		Laundry tubs	55 00
		30 gallon Boiler	12 50
			$210 50
2.	Roughing, including water pipe, soil pipe, etc., and labor		200 00
3.	Water System (Electric)		190 00
4.	Septic tank		50 00
			$650 50

6. Sewage Disposal.

Our work in this connection for the last year has been on the septic tank system, and the chemical closets. During the summer we planned and supervised three installations of the septic tank on premises close to the College grounds. The conditions in each case were quite different and a somewhat varied experience was obtained. Also many useful facts of a very practical nature were picked up, and a very good series of photographs of the various stages in the construction of the work were secured. Immediately on the completion of this practical work we prepared a blue print drawing embodying a plan and elevation, and all the details and directions necessary for one to build a complete system. Any reasonably handy man should have no difficulty in putting in at his dwelling the septic tank system by reference to this blue print. Each of the Agricultural Representatives has been supplied with one for his office, and somewhere about two hundred and fifty copies have, on request, been sent to farmers and others. The actual cash outlay for material and fittings for a complete system suited to the average farm requirements is about $50.00 and two good men can complete the job in four or five days. We recommend the use of the siphon in the second chamber of the septic tank and the one that has been found most satisfactory is the Miller siphon, an American invention, but now manufactured in Canada. Its cost is $12.00, and any reliable plumber could secure one for you.

During the present winter research work is being conducted at the Physics Building on temperatures obtaining in the tank and in the tile of the absorption bed during cold weather in order to get data to answer the question frequently

asked, namely, do not the tanks and field tile freeze up in the winter time? We believe that it is a rare occurrence that they do freeze but it will be a satisfaction to have some data on the matter. It will require two winters' work to settle this matter satisfactorily.

Reports coming to us from time to time concerning the septic tank system are very favorable as to its merits as a sewage system for farm or suburban homes. We wish to emphasize that the absorption bed area should be well drained either naturally or artificially.

In respect to the chemical closets our investigation shows that they give very good satisfaction when properly installed and well looked after. The directions for cleaning out the receptacle, and renewing the chemicals should be followed absolutely. Where there is no water service in the home, the chemical closet is to be preferred to the outside privy. The cost of a unit system large enough for the average-sized farm home is about $125.00 that is, for the latest and most efficient type of chemical closets. The chemical for a year will cost about $3.00.

7. Our Educational Campaign on Behalf of Better Equipped Farm Homes.

We are firmly impressed with the fact that all farm homes should be provided at least with running water both hot and cold, a closet, a bathtub and the necessary sinks, also that it is time that an effective campaign of some kind were set in motion to impress upon the rural people the necessity of these conveniences. Consequently we have been making great efforts of late, and with some success we believe, to interest many prominent individuals and organizations in this work and solicit their aid. The matter has been brought before the Agricultural Press. the Women's Institutes, Social Service Council, Rural Community Service, Child Welfare Departments, Provincial Boards of Health, Educational Secretaries of the U.F.O. Clubs, and others. We are taking up the discussion of farm home conveniences for two days at each of the four three month courses in Agriculture this winter with both boys and girls. The same work is being stressed in other short courses and at Rural Community Club meetings, etc. We have reason to believe that all these forces will render very effective service in supplying information and stimulating a great interest in this matter during the winter months. We look to you all for helpful suggestions and constructive criticism in regard to this very important problem. The great issue is what is the most effective means for realizing our aim, "running water in every rural home in the next ten years?"

Thus in a brief manner I have tried to state the nature of the work that has been very close to our hearts during the last year, and review the progress we have made. The work is big, so little is known, there is so much to learn; but these are the inviting problems after all, and we hope ere another year has passed we will be somewhat better equipped by the acquisition of more knowledge and greater experience to serve the rural people more efficiently than ever before. If our united labors have the effect of causing them to equip their homes with modern conveniences we shall have the satisfaction of knowing that we have helped to lift them to a plane of existence where they actually live in the real sense of the term.

L. H. Newman: There were some features of Prof. Graham's address which had particular interest for me. I am quite sure a great many more farmers would have water systems if they could stand the expense of installation. I would imagine a very good system could be installed for less than the amount stated.

In my own case, for about thirty dollars I put in a pipe line last year on my farm which brings all the drinking water to the house and this has been much appreciated. I think that if farmers cannot go the full length of Mr. Graham's recommendations, they could in many cases at least put in something that would be a step in advance of the systems they are now using. Probably if Mr. Graham had gone further he would have explained he had modified systems that would be helpful in the farm home, although it is good to have an ideal and to have the perfect plan that he has so well presented. If many farmers could see how beneficial and pleasant it is to have at least part of the ideal system, they would soon save money to perfect that system.

THE PRESIDENT: The question of protecting wells interested me. I had occasion to repair an old well that had caved in a year ago. It had never been stoned or bricked up, and it seemed like a big undertaking not only to do this, but to guard against a similar experience. I worked out a plan and discussed it with some others, to excavate the well to the original depth (which was 32 feet) and to fill in about three feet with rough stone, to set down in that stone ordinary cement pipe 18 inches in diameter, and to fill around the outside of that for a matter of two or three feet ordinary gravel. That is, getting smaller size so as not to fill in compactly around the stone, but to regard the stone as the reservoir. We completed the well by adding sections of this type and cementing all the way up. We raised the upper section about six or eight inches higher than the level of the ground, and then filled in the well in the ordinary way. We took good care to see that we put down proper piping, and so far the scheme has been very successful, and very inexpensive. I think it is entirely proof against any sort of contamination.

MR. GRAHAM: The method is first-class. If you had taken the added precaution of bringing the last tile well above the ground and banking it up to that level you would have a well practically immune from surface contamination.

Relative to the matter raised about getting something less expensive, I quite agree with that. It may be of interest to know that in a water survey of Markham township last year the majority of wells reported on were shallow wells; furthermore, those wells were in close proximity to house and barn. Most of those people are still going out to a pump located exactly over the well to get the water every day. Now, if a well is shallow, if the level of the water in the well is never more than twenty-five feet below the level where the pump is located, then the pump can be placed off to one side a reasonable distance, say in the house or barn. I am surprised that more farmers with shallow wells are not making use of such installation. So I say to a farmer, if you cannot go any farther than to put the pump off to one side in the house or barn, do so, because when you lay the water pipe from that pump to the well it is laid permanently, and if later you want to put in any other system you only have to make your connections.

MR. WIDDIFIELD: With regard to the installation of a hydraulic ram and Mr. Newman's idea of installing a partial system. I have had some experience with a hydraulic ram, and for the benefit of those here would say that it has been entirely satisfactory. We installed the system in 1891 so that it has been in use for thirty years and has given perfect satisfaction so far. It can be used for partial system, or, as Mr. Graham has said, to do all the work. If the source of water is a stream, that is, not entirely spring water, then it would not be the

proper source of supply for the house, but outside of that it could work into any other part of the whole system, and all that is required is about four or five feet of head. As Mr. Graham said, the chief expense is laying the pipe. If I remember correctly, the ram installed thirty years ago cost fourteen dollars. I do not think there is anything which will pay for itself better, where it can be installed, than the hydraulic ram.

Dr. Zavitz: Mr. Graham has emphasized quite a number of different ways to get water into the house. I think it is well that this is the case, because the arrangement for the supply has to be adapted to the circumstances. I wish to mention the water supply in my old home in Middlesex County. Just across the road is a beautiful spring running out from the side of a hill, and with the use of a hydraulic ram we have water all over the house, with a bathroom upstairs with hot and cold water, and then what is left goes on to the barn. The service of the little hydraulic ram to the convenience of that home is certainly very marked. I know that within a mile of that spot there are springs with just as good water going to waste, and if we look around over Ontario we will find that all the water power is not at Niagara or in the north, but that there are little water powers all over Ontario which we could make use of for our own homes and save a tremendous lot of steps.

Mr. Graham: The Department of Physics will gladly prepare plans if the person concerned will send in the data regarding amount of water per minute and amount of fall or head available, and will give the cost of all details required.

Mr. Breckon: I find that the average farm woman prefers soft water. In the Province of Ontario soft water is available to every farm home. With a rainfall of forty inches or thereabouts, every farmer with very little trouble could put in a system to accommodate his house the year round. The farm woman much prefers to have soft water for washing dishes and in the bathroom, and when the farmer is improving his cistern if he would just consider enlarging it a little he would find available plenty of soft water to keep his system going from one year to the other. I know where such a system was installed in the Province of Saskatchewan, where the rainfall is only about sixteen inches and during the summer they have sufficient water. In the Province of Ontario the idea of a larger cistern would cheapen the cost of both systems in the house.

Another point is the septic tank. Too much stress cannot be laid on the installation of the septic tank. I visited a number of farms where cesspools had been installed. This system works all right for a couple of years and then starts to give trouble, and it is a nasty trouble when it starts. If a septic tank had been installed a whole lot of trouble and expense would have been saved.

In the survey of Markham township only ten per cent of the farmers had water in their homes, and this not by any means the poorest township in the province of Ontario. It shows great room for improvement in farm homes. I think it is more a matter of education than of money.

Mr. Graham: I am glad Mr. Breckon brought up this matter of rain water supply on the farm. We figured out that for Ontario the average rainfall is about two and one-half inches per month. If all buildings were provided with a good system of eavetroughs they could collect plenty of water to supply all needs of home, with complete plumbing outfits, and as pointed out soft water is very much superior for household purposes. We have been emphasizing the fact lately, of getting larger cisterns on the farm.

I am glad he mentioned the question of cost. I am convinced that it is not a question of whether the farmer, as a rule, has enough money to put in the system. If they saw the matter in the proper light, with the added comforts, greater efficiency, and the chance to get more out of life they would say, "Here is the best investment we can make," and would get the money. It is more a question of getting them to have the right viewpoint and that is where educational work must strike and strike hard.

REPORT OF THE COMMITTEE ON FARM LITERATURE.

COMMUNITY MUSIC.

Dr. O. J. Stevenson, Professor of English, O.A.C., Guelph.

This second evening of the Experimental Union has for the past three years been given up to the subject of community recreation. Our experience during this time has shown that people in rural communities are glad of suggestions as to the best way to provide programmes for social gatherings. We are all agreed that some form of social and intellectual stimulus or recreation is necessary for people whose lives by the very nature of their occupation are more or less isolated. We are all agreed too that country people should not be forced to seek recreation and mental stimulus in the town or city. We are agreed, furthermore that the best kind of community recreation is that which is provided by country people themselves. What we are trying to do is to give suggestions which will assist the people of rural communities in self-expression.

The simplest and best form of self-expression for any community gathering is community music. The reason why I say "the best" must be evident to everyone. It is the best because there is no one in any audience to whom music of some sort does not make an appeal. It answers one of the most deeply rooted instincts in our nature, the instinct for rhythm. Just what this instinct for rhythmical movement and rhythmical sound is, and how it originated, I shall not attempt to explain. But the instinct is there, and because music satisfies it, it gives us pleasure.

And with this instinct some of our strongest emotions are associated. We are apt to forget just what an important part the emotional side of our nature plays in life. It is a fact that most of the machinery of our education is devised for the purpose of training the intellect, while the emotional and spiritual side of life is starved. Is it not a fact that conditions of modern life, with individual specialization, the pressure of business competition, and the importance that is attached to material wealth, tend to dry up the springs of feeling? Of all the possible means of developing the emotional side of life upon which our actions so largely depend, music is the simplest and best. This has been amply demonstrated in the Great War, where it was found that a singing company was a fighting company. The question has been asked:

"Why does a boy whistle when he needs heart? Why do the soldier boys sing 'Dixie' when there is danger of over-much thinking of home and loved ones, or of the picture of to-morrow's carnage? Why doesn't the boy repeat the multiplication table? Why don't the soldiers have a spelling match?"

Music is the best form of expression for a community because it helps to

promote good social feeling. Under the influence of good music it is difficult to hold spite and ill-will. People who join in singing "Pack Up Your Troubles" are likely for the moment to forget their own individual worries and to be on better terms with the world; and under the influence of "Auld Lang Syne" and "The Old Folks At Home" coldness and reserve are likely to give place to a more kindly and neighbourly spirit. The community song is a sort of social lubricant which makes the wheels of community life run more smoothly.

Music is the best form of expression for a community because in community singing every one can take part. There are few people in any community who have the voice or the training to sing a solo, but no matter how cracked or high-pitched or out of tune your voice may be you can take part in mass singing and you will feel the better for it.

The Community Music idea had its origin some ten years ago and it has found immediate favor. The question is: is it merely a fad or is it a vital factor in community life, which has come to stay? It seems to me that it does answer a real need of community life, but in order to make the best of it it must be properly directed. It must not, as a matter of course, be allowed to crowd out other community activities. Rural plays, debates, reading courses, lectures, and other forms of entertainment must always play an important part in community life. But community music must supplement and reinforce these other activities; and the music must be such as will hold the interest of rural gatherings.

Let us consider briefly what different elements might enter into a musical programme.

In the first place, local talent should be utilized and encouraged. Who are the people, young or old, in the community, who can contribute individual numbers to your programme, in the form of either vocal or instrumental selections? The survey of your community and the encouragement of local talent must be left in the hands of the Music Committee of your Community Club.

In the second place, what is it possible to do in the way of organizing quartettes, choruses, orchestras, or bands? Such organizations ensure permanence to the club, and give confidence to those who have to provide programmes. I am convinced that there is lying dormant in every community a great deal of musical talent that requires only proper encouragement and training for its development.

In the third place, what can be done to encourage musical appreciation among those who live in the country? In other words, if you yourself do not sing or play in public, can you not learn how to listen appreciatively to the music of others? When some one plays a violin or piano solo, or when the orchestra plays a selection, what do you get out of it? I remember as a boy spending a dollar to hear Sousa's band, then at the height of its popularity. It was a long and wearisome evening to me. One piece was the same as another to my untrained ears. The names of the composers suggested nothing to me. I was glad when the concert was over and I wished I had my dollar back. I had not learned how to listen to music, but a very little instruction would have developed my appreciation and made the whole evening a source of delight. I have asked myself since then just what was the matter, and why it is that I can appreciate a programme of band music now when I could not do so then. I think I could appreciate simple melodies then, for I spent much of my spare time learning new melodies on the violin, and I remember one evening of unalloyed pleasure when I heard Albani sing. If Sousa's band had played simple melodies I should have enjoyed it. I

think too that I could appreciate harmony, where several voices or instruments blend in part songs or choruses. But there were three things of which I knew nothing. I knew nothing of the forms or designs of longer compositions and had no conception of a symphony and the plan on which it is designed. I knew nothing of the grouping of the different instruments that go to make up a band or a symphony orchestra. It was all one big noise to me. And I knew nothing of the composer or of the thought or feeling which he was trying to express. I am gradually learning these things, and am getting more enjoyment out of listening to music than I did before. The development of musical appreciation is, I believe, possible to every one and it should not be beyond the range of people living in the country. A music teacher should be able to give to any audience, in a few talks, an idea of musical form. A phonograph should make you familiar with the best music, and papers or talks on composers should be an interesting part of your programme. A winter spent with this object in view should transform the dullest member of your audience into an appreciative listener.

In the last place, community singing should form a part of the programme of your community gathering. Community singing cannot be carried on without a leader, and the leader must be prepared to give some time and study to methods of conducting community singing. It is best to begin with old songs that every one is familiar with—patriotic songs, camp songs, folk songs, negro songs, and for variety's sake, part-songs, songs in costume, and even singing games, may be introduced. With these simple songs as a basis, newer and more ambitious songs, even including passages from oratorio and opera, may be gradually introduced. Everything depends upon the ability and judgment of the leader; but community singing must never be allowed to flag or to grow stale.

There are four ways in which community gatherings may be provided with the words and music of the songs: by the use of song sheets, song charts, song books, and song slides which throw the words upon the screen.

But the development of an interest in community music should not end merely with provision for programmes for community gatherings. It will mean the cultivation of all the musical talent in the community. It will mean that more attention will be given to the teaching of music in the public school, and the securing of a good music teacher and choir leader for the community. It will mean perhaps an occasional excursion to the city to hear a great musician or singer or a symphony orchestra. It will mean the purchase of some books on music for the local library. It will mean the careful selection of good records for the phonograph and perhaps the exchange of records between families and communities. It will mean the production of good music for special occasions such as Christmas or the community civic holiday. It will mean the organization of musical contests and perhaps even the planning of musical festivals.

But best of all, it will mean or should mean. the development of a better community spirit. and a rural community in which life is more livable. "Give me the man that sings at his work," says Carlyle. May we not adapt Carlyle's words and say, "Give me the community whose songs are a part of its community life?"

In addition to the foregoing address a short programme of music and speeches was given. Vocal solos were rendered by Misses Doris Cowan, Marion Stodart,

and Marguerite Smith; and Messrs. M. L. Hancock and G. L. Arnold played a violin duet. Five minute speeches were delivered by Messrs. J. W. Thompson, E. R. Sheppard, and D. H. Hart, of the Fourth Year. Mr. Thompson gave a report of a questionnaire which was sent out to rural teachers with respect to rural entertainments. Mr. Sheppard spoke on the subject of Athletics in Rural Communities, and Mr. Hart discussed rural social organizations. Following Professor Stevenson's address on Community Music, a pleasant half hour was spent in Community Singing, which was led by Prof. W. C. Blackwood.

THE EUROPEAN CORN BORER.

Prof. L. Cæsar, O. A. C., Guelph.

Contrast of Corn Ear Worm and European Corn Borer.

Last fall many farmers on finding numerous caterpillars feeding in the ears of their corn were alarmed lest these were the European Corn Borers. They were, however, a very different insect known as the Corn Ear Worm, which is an old pest which usually does little damage in this province, but which, owing to specially favorable conditions, became very abundant last year. It is not an insect that we need dread, for it will soon be brought under control again by the natural factors that have controlled it in the past.

The European Corn Borer is a very different looking caterpillar and has different habits. The Corn Ear Worm is, when full grown, about two inches long, quite stout, and usually conspicuously marked with several broad stripes down the back and sides. The color of the upper surface varies from nearly black to brown, or pale pink or even green. As a rule this insect confines its attacks to the ears of the corn, feeding upon the kernels of these. The European Corn Borer is a much smaller larva, being about one inch long, pale brownish white, with a brown head and many brown inconspicuous spots on the body. It is more slender in proportion to its length than the Ear Worm and attacks all parts of the plant from the tassels to the bottom of the tap root, including the ear. It regularly bores into the attacked area and makes burrows inside.

The European Corn Borer is a much more dangerous insect than the Corn Ear Worm, partly because of its feeding habits, but chiefly because it is an imported insect that seems to have reached here unattended by any of its insect enemies and because it evidently finds our climate very favorable and invigorating. It is true that some of our native insects and birds feed upon it but not nearly to the same extent that they do upon our native caterpillars. Moreover it does not seem to be injured by our winters or by disease, and hence, it is increasing rapidly, much more rapidly than any other corn insect, and threatens to continue to do so.

Introduction and Present Distribution.

The insect was, so far as we can judge, introduced into Ontario about ten or twelve years ago in shipments of broom corn from Austria which came to a broom factory at St. Thomas. Since then it has been gradually increasing until to-day there are many millions in the province. At present they are found in every county along the shore of Lake Erie, and also in Huron, Lambton, Perth,

Middlesex, Oxford, Brant, Waterloo, Wellington, Lincoln, Wentworth and in the town of Pickering in Ontario county. Most of these counties are very lightly infested, and it is very probable that they will not be badly infested for several years. The worst infested counties are Elgin and Middlesex and of these far the worst part is an area of about fifteen miles square between St. Thomas and Port Stanley.

Is it a Great Menace?

It is difficult to be sure as to how great a menace the borer is to the corn industry, but judging from the great increase in number from a year ago and the fact that whole fields of sweet corn have been utterly ruined in Elgin County and many fields of flint almost ruined, and dent severely injured, it certainly looks as if the insect would ultimately ruin the corn industry unless efficient control measures are found. However, as has been said above, a good many years would elapse before this could happen all over the province, even if there were no control measures adopted.

How the Investigation is Going.

Eradication is impossible. Hence our duty is to study the insect's habits and life history with the utmost care so that through this study we may find a means of combating it successfully. Such a study has been going on during all this last season. Mr. G. J. Spencer has been in charge of the work for the Province, and Mr. H. G. Crawford for the Dominion. These two have worked together in close co-operation. It is a pleasure to report that excellent progress has been made, and that certain habits or weaknesses of the borer have been discovered by taking advantage of which a very large percentage of them can be destroyed. We do not, however, think we have yet solved the problem of control but we have made a big start on it, and are hopeful that we shall make still further progress next year and ultimately discover a perfectly practicable and satisfactory method of so lessening its numbers that the corn will not suffer much loss.

Life History.

The Corn Borer has four stages in its life—the adult or moth, the egg, the larva or borer and the pupa. The female moths are a pale yellow or yellowish-brown color with a wing expanse of about one inch. The males are a little smaller and browner in color. Moths began to emerge in Elgin last year about the middle of June and continued to do so until about the 10th of July. Egg laying begins about four days after the moth appears. Eggs are small, white, nearly flat and laid in clusters of about 30 on the underside of the leaves. Females average about 400 eggs each. These hatch in a little over four days. The larvæ while very small eat holes in the leaves and then work into the stem. In doing so they usually work into the developing tassel, and as this expands they make burrows in its stem which cause it to fall over. Later the larvæ enter the stalks at any point and make burrows inside. The result of these and of rot, which often gets in through the openings, is that the stalks become weakened, fall over and die. Sometimes nearly all the stalks in a field will be ruined in this way. Last year the borers were full grown by the middle of August, some of them earlier. Before becoming full grown many of them migrate from one

corn plant to another or to stout weeds near the corn and enter these. Once mature they cease to feed and settle down for winter in their burrows, sometimes spinning a silken lining about themselves. Hence the insect winters solely as larvæ in the stalks or ears of corn or in weeds, and as they may be, and often are, low down in the stalks, large numbers may be left in the stubble after the corn is removed.

In spring they sometimes feed a little on the corn, but often do not, and about the first week in June they begin to change into pupæ in their burrows, and in a couple of weeks commence emerging as moths.

Host Plants.

From what has been said it will be inferred that the only plants that they lay eggs on in Ontario are corn or its close allies such as sugar cane or broom corn. All kinds of corn serve as host plants. Weeds are not natural host plants, for though the larvæ bore into and feed on them eggs are very seldom laid upon them.

Of the different kinds of corn the sweet varieties are usually worst injured, partly because the borers tend to concentrate on the ears of these, evidently being attracted by the sweet odour. Flint corn suffers badly—worse than dent—probably because it matures earlier and has a smaller stalk and so cannot withstand injury so well as the larger and more robust dent.

Early Corn Worse Attacked than Late.

There is a great difference in the amount of infestation of early and late corn. Fields of late corn were regularly very little injured last year while early corn all around them was practically ruined. A difference of even a week in the date of planting often meant a great difference in the amount of infestation. This may prove an important matter in working out control methods.

I have now stated all I think that should be necessary to give a fairly intelligent idea of the habits and importance of this new pest. There are many matters such as scouting and quarantine that have not been gone into because of lack of time.

CONTROL MEASURES OF THE EUROPEAN CORN BORER IN ONTARIO.

G. J. Spencer, Lecturer in Entomology, O. A. C., Guelph.

Complete control measures for the European Corn Borer in Canada have not as yet been perfected but many facts have been worked out with regard to its life history by Dominion and Provincial Entomologists, enabling us to outline certain practices which will go a long way towards keeping it in check in the districts where it is most prevalent. The quarantine regulations now being put into force are intended to limit the borer to these areas.

We know of no means of destroying the European Corn Borer in the pupal, moth or egg stages. Since it spends about ten months of the year as a larva, or borer, it is in that stage that we can best bring about its destruction in largest

numbers. At the time of harvesting the corn, the borer is full grown (by the middle of August in 1921), and may be found lying in its burrows in all parts of the corn stalks except the leaves, from the tassel down to the tap root, prepared to pass the winter without any further feeding.

The Great Importance of the Silo.

By cutting the corn as low as the binder will work (or by cutting husking corn at ground level with a hoe) by far the largest proportion of borers in a field will be removed in the stems, and the silo should be filled and if there is any corn left over, refilled, because all borers that go into a silo are killed. The knives of the cutting box kill great numbers and the heat and fermentation of the ensilage, kill all the rest. The silo is going to be one of the most effective means we have of keeping down this pest.

Where there is no silo—

The handling of corn where there is no silo presents a problem that has to be dealt with carefully and thoroughly because the corn stalks taken from the field may harbor large numbers of borers; also there may be large numbers in the corn stubble, in weeds growing in the cornfield and in the pieces of broken stalks or debris, lying on the ground after harvest.

The corn should be husked as soon as possible and the stooks hauled off the field, because we have found that the best way to destroy the borers remaining in the stubble, in weeds and in debris, is to plow the cornfield as soon after harvest as possible. This early fall plowing kills some of the borers but is of the utmost importance because it forces the rest to leave their burrows where they were expecting to spend the winter, and to come to the surface of the ground where they find no shelter on the bare broken-up soil and so perish. Some of them will migrate from the field to the edges and will enter weeds growing alongside or will pass into the next field. For this reason the weeds and long grass growing on the edges of a corn field, should be burned over in early spring when they are dead and dry.

The cornfield itself should be carefully plowed under so as to completely cover up all stubble, stalks, weeds, and husks. The earlier this is done, the more effective it is. Rolling before plowing crushes down stubble and makes it easier to plow. Plowing done later than the middle of September is of little use as the borers will not come up and most of them will survive the winter underground, only to come up next spring when the weather is warm to find new sheltering places and to turn into moths in June.

Husking corn, then, should be removed from the field as soon as possible, and before being used as feed, should preferably be shredded, as we have found that shredding kills a lot of borers in the stems, forces others to come out where they will not find shelter, and enables the stalks to be more thoroughly and completely eaten up by stock. No complaints have been received so far, of any damage being done to cattle by dead borers in silage or in stalks.

The waste stalks after feeding should not be thrown out on to the manure pile but should be piled separately where they will not be trampled by the stock, and should be burned before the first of June, before the moths come out.

Since the cobs also may contain borers, they should not be left lying around the yard after being shelled, but should be burned with the waste stalks.

For next year's crop, dent should be sown instead of flint as far as possible. Since late planted corn suffers less than early corn, it will pay to plant most of

the corn a week later than usual. We advise putting in a strip of quick growing corn about five rows wide, down the side of the corn field nearest to last year's crop a week before the main crop so that it will grow quickly and will attract the moths to lay their eggs on it, thus helping to reduce the infestation on the rest of the field. This strip should be removed early in August before the rest of the crop, fed and the waste parts burned, or ensiled with the rest of the crop, being put into the silo first.

There are very few natural parasites on the European borer and the effect they have in controlling this pest, is negligible.

SUMMARY.

Use a silo, plow the corn stubble field, before the middle of September. Clean up and burn all waste stalks and cobs all over the farm, and get your neighbor to do the same thing. It is impossible to save your crop if your neighbor will not clean up too.

A MEMBER: How far do the moths fly?

MR. SPENCER: The moths fly almost entirely at night; just how far they fly we do not know, but they have been known to fly five miles.

MR. WIDDIFIELD: Can you tell us of its life history in the country it came from?

MR. SPENCER: It has been known as a pest of corn in Europe for fifty years. In Austria, its original home, stringent methods of control have been adopted from the earliest times. The main method there has been clean-up measures.

A MEMBER: Why not emphasize the use of the silo a little more strongly? That has naturally become the method of handling corn throughout the majority of the western counties here, and I think it should be impressed on the southern men more strongly than in the past, especially since this pest has become so serious.

PROF. CÆSAR: It is just possible that some day we may look upon this Corn Borer as we have come to look upon the San José scale, which to-day in the Niagara District is considered by many as a blessing. Although this scale caused a lot of work, yet the results brought about through that work, namely spraying, have paid for it many times over. Should this insect result in the universal use of the silo it will not have been an unmixed evil.

A MEMBER: Will it hurt the ensilage for food?

PROF. CÆSAR: That question was brought up at a meeting where a hundred entomologists were present from all over the United States, and all were of the opinion from data based upon other insects that there would be no danger at all to cattle merely as a result of ensilage having crushed corn borers in it.

A MEMBER: Have any successful methods of spraying been tried?

PROF. CÆSAR: Spraying methods have been tried but were found impracticable because the borers continue to hatch for several weeks and soon enter the stalks where the spray cannot reach them. Hence to be successful it would have to be done every day, but this on account of cost and labor is out of the question. Moreover spray if applied often would poison the ensilage.

PROF. ZAVITZ: It seems to me that to advocate the silo is a very important thing, because if it should happen that you could not grow corn successfully, there are other crops which could be used, such as sweet clover and sunflowers. Nothing has been said to-day about sunflowers, but I do know they are used extensively in southern Illinois, as owing to the ravages of the Chinch bug they cannot grow corn. There were sunflowers in Mr. Spencer's experiments last year, and there

was no infestation whatever of the European corn borer in this crop. In the United States I believe there has been just a very slight infestation. The use of the silo is very important in connection with this whole question.

A MEMBER: Is there any danger of getting the corn borer in seed corn?

PROF. CÆSAR: The Government regulations are that seed corn can only be purchased shelled, unless inspected.

THE BUYING AND SELLING OF SEED POTATOES IN SOUTHERN ONTARIO.

A. H. MCLENNAN, VEGETABLE SPECIALIST, TORONTO.

For quite a number of years it has been a common practice in most parts of Ontario, and especially in the southern section, for a person wishing to buy seed potatoes to go either to his neighbour who had better looking stock, or to buy from some section where he heard the yields were better than his own. This practice has not given the results that had been hoped for, as there are a number of things which cannot be taken into consideration with this method of purchasing, and it is also a fact that many old varieties have been sold through seedsmen under new names which when planted did not return the profits hoped for.

Also we find that the method of judging fields of potatoes in competition has been such as not to help greatly. A judge is sent into a district at digging time and is expected to judge the general condition, trueness to variety and freedom from disease, when in many cases the top is gone. All he can hope for is to guess at the variety and to lay the greatest emphasis on the cultivation and weight of tubers. It is an impossibility for him to tell whether there are one or more varieties in the field. This can only be done satisfactorily when the field is in flower.

But the greatest fault of all has been in their inability to judge the tops when they were still growing green. There are two very prevalent and dangerous diseases affecting the potato crop in Ontario—Leaf Roll and Mosaic. It is unfortunate that these two diseases cannot be detected except when the plants are from one-half to two-thirds grown and even then in certain seasons the disease may be suppressed. By that we mean not showing that year but would the next under favorable conditions. It is also well known that these diseases can be transferred from the diseased to the healthy plant by means of insects, the chief of which are the Leaf Hopper and Aphids. These diseases, when distributed by these insects, will not show to any extent that year, but when the tubers are planted the next year the crop may be affected from ten to fifty per cent. As both these diseases seriously lessen the yield in a year or two it is necessary to buy seed which is not affected. Some few years ago the Government of Ontario in conjunction with the Dominion Department of Botany undertook to certify seed potatoes. This certification is carried out in the following manner: In July when the potatoes are about six or eight inches high, a man goes carefully through the field making counts of one hundred plants in at least three places, noting on his report sheet the amount of the different diseases that show, also he notes the amount of foreign varieties that are in the field. If the percentage in a field is nearly up to the standard the proprietor is asked to rogue and is then given a second inspection two weeks later. All those who pass the standard of field inspection who desire are then given a tuber inspection either in the field or in the bin, when a disease count is made and the potatoes graded No. 1 or turned down entirely. If an order for these seed

potatoes comes in, the potatoes are again inspected when placed in the bag, and at this time there is attached to the bags a tag which gives the number, variety and grower's name and address.

STANDARDS

CERTIFIED No. 1 GRADE SEED POTATOES, 1921.

Black Leg	3%
Curly Dwarf and Leaf Roll	2%
Mosaic	2%
Wilts	3%
Foreign	1%
Misses	Not taken into consideration.

1. If Black Leg and Wilt are present alone—7% allowed.
   If Black Leg and Wilt are present combined—7% allowed.
2. If Leaf Roll and Mosaic are present alone—5% allowed.
   If Leaf Roll and Mosaic are present combined—5% allowed.
3. If a percentage of (1) and a percentage of (2) are present—6% allowed.

STANDARDS FOR 1921 TUBER INSPECTION.

Bacterial Rot or Wilt	2%
Late Blight and Dry Rot	3%
Net Necrosis	3%
Internal Spotting	3%
Common Scab, Occas. Spots	3%
Common Scab, Severe	10%
Powdery Scab	1%
Rhizoctonia	3%
(10% Slight) (5% Severe)	
Silver Scurf	3%
Slightly Damaged	2%
Foreign	1%
Frost Injury	No allowance
Off Type	2%

No. 1 Grade seed potatoes shall not be less than three ounces nor more than twelve ounces in weight, and shall not contain more than a total of five per cent. of all diseases with the exception of slight common scab, for which an additional five per cent is allowed, and shall not contain a higher percentage of damaged and foreign tubers than is provided for in the standards. These standards are the same for all the Provinces.

A list of all the men who have passed either the field standard or both field and tuber standard is kept in the office of the Vegetable Specialist in Toronto and copies of the certificate may be obtained at any time. Up to the present year there has been a good deal of difficulty in obtaining the seed from the North and this year a considerable quantity was inspected in southern Ontario and found to be satisfactory. In all some 167 fields were certified to, producing in the neighborhood of 35,000 bushels. The greater part of this has already been sold at $2.00 to $2.25 per bag. More would have been sold if the prices set by the growers at first had not been a little too high.

This brings up the question of how much more valuable this seed is than ordinary seed and how much more should be paid for it. It has been stated a number of times that this seed should be worth at least $1.00 a bag more than table stock, and this is true where the grower brings it up to the tuber inspection standard, but in many cases much of the seed is sold on the field inspection and for that reason sells for a very little more than ordinary table stock. This method of selling on field inspection should be satisfactory, for the buyer knows exactly what he gets. The seed on the outside may not look very good as it may have common scab or Rhizoctonia on it, but both of these diseases can be easily controlled by corrosive sublimate and he knows exactly what is inside the seed.

I had an interesting experience two or three years ago; a carload of potatoes was brought down from the North, which was sold out at $3.25 a bag. One man objected to the type of potatoes he received, saying that they did not look anywhere near as good as his old ones, which was perfectly true as to outward appearances. He was persuaded to keep them and the seed was treated for the scab which affected them. Meeting him next summer I received an order from him for the next fall's crop, and he told me that his results had been wonderful with this seed, that they were so much ahead of anything that he had ever used before that he could not afford to buy cheaper seed again. It is not the first cost of the seed that counts, but the returns from the crop, and it would seem worthy of greater attention than has been given to it in the past. Of course, the biggest trouble so far has been getting it laid down from the North at reasonable prices. It cost from 56c. to 79c. a bag in carload lots to lay down seed from Fort William and West in Toronto. As yet we have no facilities to dispose of carlots as growers desire anywhere from 10 to 100 bags. Some means, we hope, will soon be provided but until then we must trust to southern Ontario. Here we have considerable worth-while seed.

The last problem is the educating of the buying public as to what certification stands for and that they be sure that the tag is on the bag before accepting the certification. If in doubt write the Department of Agriculture in Toronto.

A MEMBER: Is there at present a good market for certified potatoes?

MR. MACLENNAN: There is an exceptionally good market at the present time, if we could only get potatoes into Toronto. There are districts close to Toronto where men would take from five to one hundred bags of certified seed if it were obtainable.

A MEMBER: What time is this seed generally sold?

MR. MACLENNAN: The latter part of September and in October. The northern grown seed must be shipped before the 25th October, on account of danger from frost.

THE FUNCTION OF THE MIDDLEMAN.

DR. H. E. ERDMAN, BUREAU OF MARKETS, U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C.

I wonder how many of you have ever stopped to think just how it happened that any time you want an orange, if you are anywhere near a store in country, town, or city, you can usually have a choice of several grades of oranges. If you are like most audiences, it has probably never occurred to you that there was anything remarkable in that fact. Yet those who have stopped to think of it have perhaps realized that, after all, there must be something wonderful about our economic organization which brings it about that oranges, which are produced in only very small areas in Florida, California, Spain, Italy and a few other places—only dots on a large map—may be purchased in almost any place and at almost any time. So I could go on and name a good many other commodities. Take the question of tobacco, it comes from a relatively small number of very restricted areas, which if indicated on maps (in the form of dots, each representing a given quantity) would appear at just a few little spots over the United States and some foreign countries, and a tiny speck in southern Canada, yet you find it on hand for you just about when and where you want it in something like the quantity you want.

The same thing is true of many other commodities. We find a good many people criticizing our marketing machinery, who entirely overlook the fact that after all there are a great many points in which it is extremely efficient.

I want to note particularly some of the functions which our marketing machinery is designed to perform. This machinery is really the result of long years—generations even—of evolution. You can read your old histories and find there was something done in the way of marketing a great many years ago, but a great deal of it during long periods was nothing but barter or the exchange of goods for goods between people in the same or closely related communities. During the past century exchange of goods for money has been constantly widening with communities becoming more and more interdependent and with a constant increase in the division of labor until at the present time exchange is extremely complex.

Why cannot we in some measure still do direct marketing? The Department of Agriculture at Washington, D.C., a few years ago, had several men on the job trying to put across marketing by post, direct marketing between men who produce in the country and those who buy in the city. We had a great deal of discussion at that particular time as to why we did not have parcel post as in some foreign countries. We had a four-pound limit, I believe it was, on the weight of the package, and even that, as I recall it, at something like 16 cents an ounce—an extremely exorbitant and impossible rate when it came to transmitting farm products. There was a good deal of agitation for direct marketing facilities, until in 1913 we got the present parcel post law. Then somebody discovered that, after all, that would not work. The biggest difficulty was, perhaps, in locating customers for the producer, or after he got connected with the city buyer, Mr. Farmer found he had a little too much for this regular customer, or, perchance, the trouble was at the other end, the consumer did not want quite as much as the farmer was sending. The same thing arises when it comes to the question of store-keeper or grocer buying directly from the farmer, not only with regard to the quantity produced, but with the quality. Early in the season vegetables are very good, but scarce, and the farmer would like to get high prices for them; the consumer in the city is willing to take all the farmer has at that time; but later the farmer has to find a home market at reduced prices for his surplus.

It must be remembered that to-day it is almost universally true that the products of one person will be consumed by some other person or persons in widely different parts of the country.

In the case of farm products the first important function is that of assembling at country points. Before your farm products can be shipped at any distant point and delivered in anything like a satisfactory way, it is absolutely necessary to get them together in relatively large quantities. This is particularly true of farm or manufactured products produced in large numbers of small lots, very often of widely varying quality and appearance, and useful for a wide variety of purposes and produced over a very widely scattered country. Now, before they get very far along they have to be graded, and this is a second function which some agency has to perform. All farm products vary very decidedly in quality—different grades of wheat, various qualities of live stock, various qualities of fruit. Take apples, for example, in a city store, if they are all mixed up, all grades in one basket, they do not look nearly as attractive as if sorted. But you find in one corner of the city perhaps there is a class of people who would pay a fancy price for the best apples in that lot if by themselves, but being mixed, would probably not buy them at all. In another section of the city is found a

class of people who could not afford to pay for the best but would buy the poorest. Then in between you will find the great bulk of people consuming all commodities who would buy of the middle grades; but there is always a demand for the best and always a demand for the poorest, and when got together in sufficient quantity to make it worth while you will have a market for them. It does not make any difference whether it is wastepaper or apples—quantity counts. That brings in another fact, that you must have enough of the product produced before you get anywhere at all with more efficient marketing. There must be enough to make it worth while to assemble or grade, or store, or advertise.

Another function is that of transporting, which I will not take time to more than mention.

Another factor is that of packaging. A very large part of farm products are packaged at some stage or other. Perhaps you have thought it an extravagance on the part of marketing agencies that so many things are put up in packages. Perhaps it is. And yet, why is it done? It is because you pay for it in preference to some of the other things in bulk, simply because you are willing to pay a few cents more for the extra quality and service of having that thing in the size of package you want. Furthermore, you go back next month and do the same thing, and probably will continue to do it. Practically everything sooner or later has to be packaged, and packaging must be paid for.

Another function—perhaps less well known—is that of locating the market. As an illustration of this I might cite an instance that came to my attention in Northern Ohio. A man is running a grain elevator in a town which has two or three other elevators, among them a farmers' elevator which is doing only moderately well. The co-operative could not meet this particular dealer's prices. The reason was not hard to find. He had to pay a few cents more than the co-operative in order to get all of the grade of oats he needed, but he sold it at as much as ten cents a bushel more than they could. He said, "I would not tell you where I sell it, but I have several markets where I can place that quantity and quality of oats for people who take my word for it that it is of a certain quality. I clean up some of the rest and satisfy the particular wants of another market. I happen to know of these places and can get rid of all the oats I have." That fellow had *located* the market. And that is what business men all the time are trying to do, and one of the expensive things every individual or company must do when getting started. In this particular case the co-operative had not done it as well as its competitor.

In another case a live stock buyer is doing a good business with four or five grain elevators in his vicinity. He has made arrangements to buy hogs of them, which he in turn distributes according to their needs among about forty small packing plants located all over the south-eastern United States. He has made arrangements with these plants so that among them he can place almost any quantity of hogs he may pick up among this group of elevators or from farmers.

After getting the product into the market comes the problem of processing. In fact this may come at country points as is the case with butter and cheese. A great many farm products have to be processed before going any further. Such are wheat, rye, corn, for home consumption, surplus fruit, milk, cream etc. From the central markets all those things have to be distributed. There are really two movements—a movement into the large central markets and a movement outward. I will illustrate by Chicago, located on the lower end of Lake Michigan. It is the gateway of the Middle West, and a great proportion of our main products pass

through Chicago sooner or later on their way to the great consuming centres. There are a great number of wholesale dealers who make it a business to assemble farm products in large quantities—carloads and sometimes even trainloads—and may send these on right through to some eastern city, Cleveland for example, in a consuming centre. There the carloads or trainloads are broken up and go trickling out to the smaller consuming centres. The men who are distributing, again, have to know and keep in touch with their points of contact, their best markets, and here we find all the time that constant competition for the best markets. Take, as another example, the California Fruit Growers' Exchange, which handles mainly oranges and lemons, and the Florida Citrus Exchange, which is only slightly different in type. These are all the time competing in the same territories each watching for any slight advantage. Each is all the time watching the market price in each of the various markets, and is constantly attempting so to distribute its crop among the large markets to best advantage. There each sell to wholesalers and jobbers who in turn distribute to the hundreds of retail dealers, push-cart peddlers, and other fruit vendors in the respective cities and nearby towns. Another illustration of the way markets have to be studied in this matter of distribution is Boston, for example, which prefers a brown egg, while New York prefers a white egg, and each will pay a little more, at certain times at least, for the egg of its preference. There is a case where grading and proper watching of the market means a few cents extra to the people who know how to get stuff there and meet those particular demands.

Then going into the retail end we have still a different thing. If we go into even any small store we find that man keeping hundreds of things on his shelves that you and I are likely to come in and ask for, and we may find anything there from a keg of nails to a jackknife on the one hand and bananas and pickles on the other. The retailer tries to anticipate what his customers will want, and most of you depend very largely on the initiative of that retailer to have what you want.

Ordinarily, we have these various functions performed in a regular order, any place along the line. Starting in at the country end we have the country buyer. Next we are likely to have some wholesaler who receives the products and brings them togther in large quantities. Going further we have the distributing agent or large distributor in the cities. He in turn sells to the jobber. The latter sells to the retailer who wants goods of a wide variety, each in small quantities. For example, a jobber will keep his retailers supplied day after day, or every few days with the various commodities in the quantities desired, which may mean a box of oranges, a few dozen cans of fruit or vegetables, etc. The city of Columbus, Ohio, alone, has something like eight hundred people retailing foods. We have in every little community places where people can go and get things they want, when they want them, and in the smallest quantities. Chain stores are taking the places, not only of the wholesale receiver, distributor, and jobber, but also the retailer; in other words, they have stores under one management, a sort of wholesale department, with little retail stores scattered all over. It is a question of how far they can go in reducing expenses. What is evident is that while they can eliminate some of the merchants, these functions still have to be performed. It is just a question of grouping in such a way as to bring about different management, but the commodities have to move through somewhat similar channels, and the functions are still being performed and will have to be performed.

The last one of these functions, which I almost omitted to mention, and an extremely important one, is that of financing. Sometimes we forget that some-

where all the way along the line someone has to own these goods, someone has to advance money for them—his own or some he has borrowed. Whether the farmer had best get his money the minute his products leave his gate and thus let the other fellow hold the bag and take the profits or losses or whether he had best keep control a little farther along the line and himself take any profits or losses makes a difference only in method. At any given stage somebody owns the goods, and has money tied up in them. The whole thing hinges around the question of transfer of ownership. Someone at some stage or other has to have the purchasing power to take those goods from someone else, and that is true of every one of these agencies mentioned. Starting with the country buyer, I could name half a dozen ways in which he gets the money or credit; the same is true of the wholesaler and retailer and consumer. The consumer in very many of our industrial towns pays only once or twice a month or once a week.

Now, who are to perform these services? Very often I have heard speeches in which it was pointed out that all we had to do in order to solve our marketing problems was to perfect some marketing organization which would eliminate the middleman. It seems to me that the whole question of who shall perform these functions hinges largely around the question of who can perform them most efficiently. Efficiency in marketing is, after all, the watchword, and efficiency very often involves co-operation. Take, for example, the California Fruit Growers' Exchange. There are three or four things which they have done in their marketing operations which could not have been done nearly so well without co-operation, such as grading, advertising, making distribution more uniform. All of this leads towards efficiency, and that is after all, it seems to me, the thing that has to be looked for. That means, therefore, that unless a co-operative organization can perform the services it proposes to render more efficiently than the private agency which is now performing them, or just as efficiently at least, it is not going to persist. I have been taken to task for making the statement that co-operation cannot exist, if not more efficient than private initiative. Men have said to me that if it is just as efficient that is all we need. I say it is not, for the reason that there is the difference between co-operation and private business that there is between the case of the hare and the hound—the hare is running for his life, the hound for his dinner. A co-operative association is a good deal like the hound; your private organization is very much like the hare. Put a man in a business institution down town with an investment of many thousand dollars, usually most of his own money, and unless he uses every ounce of the gray matter in his head, and perhaps hires some one else's as well, he is likely to have somebody get the best of him, and if they do, it may mean the loss of an accumulation of a life-time. He does not want to do that, and if he can help it won't do it. The man who is operating a concern for a group of farmers or others is doing it for his salary. There is no way I know of to keep him as much interested as a man operating his own business. We run across that sort of thing all the time. I am a firm believer in co-operation, but I realize it will not do all that some claim for it. I am simply trying to point out that what we want is efficiency, and that merely to form a co-operative association will not of itself give you efficiency.

In very many cases co-operation could be more efficient, but there are other instances and other methods of co-operating which will be less efficient, and just as surely as we make them less efficient, sooner or later a private concern will crowd them out. Even with those just as efficient, some slip will occur, some private individual will come along and see a chance to make a profit and then your co-operative will go unless it is ever ready to become still more efficient.

They tell me, for example, on the Pacific Coast where formerly it cost about fifty cents for a box to put up these oranges, the co-operatives have reduced the cost to something like thirty cents a box, but along with that, private enterprise has developed almost as efficiently. Co-operation has benefited and is benefiting those farmers even though that fact may not be as obvious as before.

Let these two or three points stay with you. Improved marketing demands the performance of these various services as efficiently as possible. We do not necessarily care who performs them so long as they are efficiently performed. Progress will come from the gradual improvement of existing marketing agencies or from the substitution of some that are more efficient.

THE NECESSITY OF ADOPTING CO-OPERATION IN MARKETING AGRICULTURAL PRODUCTS.

Hon. Manning W. Doherty, Provincial Minister of Agriculture, Toronto.

In opening his address the speaker referred to the fact that years ago the President and himself had been attending the Experimental Union as students of the Ontario Agricultural College. This gathering each year down through the past thirty years or more has been one of the media of getting the information of our experimental departments to the public of the province. I sometimes feel that one of the weaknesses of our agricultural experimental work is the inefficient machinery which we have developed to get the acquired information into the hands of those who could profit by that information.

I frequently feel, that even if we discovered nothing new in the next few years, if we could get into the hands and to the minds of the farmers of this country all of the information that we have up to date acquired, that we would be a long way ahead of where we are at this time. I have no suggestion to make, but I wish the officers of the Union would keep in mind how desirable it is to see if there is any modification, if there is any change which can be made in your programme or in the method which you have adopted up to date, in order to increase the efficiency of the work which is attempted and has been attempted down through the years of this Union.

It is also a very great pleasure because of the subject which has been allotted to me, not only because of the interest and importance that I attach to this subject, but because it would appear to me that the Experimental Union and the officers in control are alive to the changing conditions under which we live. So far as I know this is the first time that this very important subject has been upon the programme of the Experimental Union.

I feel it is of very great importance because it marks a step forward, because it indicates that the officers and members of this Union and the President of the institution and his staff are alive to the vital importance of investigation at all times, and in all their work keeping close up to the real every-day problems confronting the agriculturists of the Province. It is very interesting to follow out investigations of this theory or that theory. Such investigational work is very attractive, and in some cases leads to valuable results; but the necessities of our case are so urgent that I feel that this institution in all its branches of activity cannot be brought home too closely to the farmers of the Province, and I want the farmers of the Province to at all times feel that this institution is here for the purpose of serving the farming community of the Province or of the Dominion.

No agricultural college can afford to have a set or fixed policy, because of the fact that an institution to be efficient and effective must be sensitive to the ever-changing requirements of the people it is trying to serve. There can never be in agriculture set or fixed needs, because of the fact that this industry is the basis of all civilization, and civilization is progressive, so that with the passing of days and months and years the problems are constantly changing and the institutions should keep themselves at all times sensitive to these needs and requirements.

Now, before touching on the subject allotted to me, I want as head of the Department to take this opportunity of welcoming Professor Erdman from the country to the south of us. Down through the years there has always prevailed a feeling of good fellowship and a desire for co-operation between the expert agriculturalists of Canada and of the United States. Hundreds of our bright boys have gone from this institution and occupy important places upon the staff of the agricultural colleges and experiment stations of the United States. The country from which Professor Erdman comes and our own country must frequently face similar problems. Their acute problems are almost always our acute problems, and at all times we welcome the investigators of the institutions of the United States.

The subject which has been allotted to me is, "The Necessity for the Development of Co-operation in Selling Agricultural Products." Certainly something is needed. The thing is to decide whether it is co-operation that is needed, or something else. But when you have in a country such as ours, and a country such as that which lies to the south of us, both countries with tremendous agricultural possibilities, countries capable of producing agricultural products as efficiently and as economically as any part of the world, and when you find in this year of 1922, the agricultural industry in both of these countries in its present state, there is something needed. They say that the farmers are the only class that to-day are looking up. Well, that may be so, but when a man is on the flat of his back there is no other way to look but up. Now I say that the condition in which we find ourselves to-day shows us, beyond a shadow of doubt, that something not only should be done but that something must be done, and I will take a few minutes of your time to try and show that in my opinion something can be done by the development of sane, safe co-operative methods. The agricultural settlement of this Province dates from about one hundred years ago. In those early days the handling of our produce was exchange and barter. It will hurt none of us to pay just a little more attention to reading the experiences of the early settlers of the Province of Ontario. It will make us just a little bit more proud of the Province in which we live, when we have brought vividly home to us the trials and the triumphs of the early settlers of this Province—a group of heroes, men and women who knew what a full life was, men and women who knew and came to the realization that a full life could not be realized in living it unto oneself, people who were charged with a proper appreciation of what man owes to his fellow man. These settlers came in and cleared this Province, and carried on their trade largely in the early days, as I say, in exchanging what they produced for some other commodity they needed.

Our machinery of carrying on trade has been built up from that day to the present, and as it was stated here last evening by Prof. Erdman, this machinery of carrying on our trade and commerce has not arisen over night, but has developed down through the years. The extreme radical is the man who says, "Let us scrap everything that we have inherited from our forefathers, and start something new."

A new variety of an extreme radical, just as great a Bolshevist, is the one who says, "Everything that is, is right, let us leave everything alone." But the man of judgment is the man who realizes that nothing is permanent, that all we have built up in the past may properly be changed, and all mankind be the better of it. In establishing any new order, whether it be social or commercial, those who are active, however, to my mind would do well to consider that phase placed before you last night by Professor Erdman, and be not too ready to pull things down, but be not afraid to pull it down when you know it is wrong. We have gone on up to the present time when we find the country exporting agricultural products, and this leads me to the point where I feel that the development of a co-operative system becomes necessary. This country finds itself to-day faced with very many serious problems and carrying a quite heavy burden. We have a population, as will be disclosed by the last census, of something less than nine millions of people, a national indebtedness of over two and one-half billions of dollars. It requires between $500,000,000 and $650,000,000 a year to pay the interest on our foreign indebtedness and our running expenses. Now $600,000,000 here for a population of eight and a half millions of people is a very considerable burden, a burden which the Canadian people are going to discharge. They are never going to repudiate their obligations. That being the case, it is the prime duty of all men in public life to so guide affairs that the people can carry this burden with the least labor and can discharge it as soon as possible. There are only two ways in which this can be accomplished. One is by tremendously increasing the number of shoulders to carry the burden—increasing our population. I am of the opinion that the salvation of this country is going to come through sane, aggressive and discriminating immigration, bringing in the right kind of people to this country and developing our latent resources, but that is aside from the point that I have in mind. After increasing the number of shoulders, then we must increase our exports. Our foreign indebtedness can only be met by exports. This, I believe, is true, and is acknowledged by all economists.

We have had a very striking example in the condition which now confronts the United States. We now see, probably, a little more clearly than formerly what constitutes prosperity. We now see, probably as we have not seen before, that a country might have all the gold on earth and still stagnate. The possession of gold does not mean prosperity. Trade alone brings prosperity. Therefore, one of the big pressing problems confronting this country is that of increasing our exports, and I shall attempt in the few minutes at my disposal to try and prove beyond a doubt that this country cannot successfully increase her exports and compete with other agricultural countries of the world unless she adopts a co-operative system of handling her products. When we go into exporting we immediately come into competition with all the countries of the world who are exporting agricultural products, and must be prepared to compete with them. We must produce, we must market, as efficiently as they do.

In order to get a proper view of the question, it would be well to survey the countries of the world who are our chief competitors in the markets of the world. Any man in business does well to inquire, as closely as possible, into the methods followed by his chief competitors. Never mind the fellow who is lagging behind and does not come into competition with you, but get your eyes on the man who can undersell you and who is successful in taking your markets away from you, or keeping you out of the markets that he possesses. So if we survey the countries of the world, who are our chief competitors, who are making marked progress in the increase of their exports, what do we find? We find that these competitors are

Holland, Denmark, New Zealand. We find that they are our chief competitors in dairy products in Great Britain. If we look over the methods followed in those countries, we find that in every one of them they have developed highly organized co-operative concerns.

Professor Erdman last night rightly pointed out the work which has been done by our middlemen. I do not believe that he had the intention of leaving with you the idea that co-operation had been a failure, or might be a failure. Personally, I can point to dozens, yes, and hundreds of failures of co-operative effort, but whether it went into hundreds or dozens would not shake my faith in co-operation, in the effectiveness of co-operation. Co-operation is no magic word, but co-operative effort if it is sanely and safely managed will bring any country to a greater or higher state of prosperity than any other system which has been evolved up to date. The agricultural world to-day is shaken probably as it has not been shaken in the last half century. Many countries find themselves in a state of collapse as regards agricultural industry, and the only countries to-day that are riding the storm with any kind of prosperity are those that have adopted a co-operative system, and their security and their present prosperity is almost in direct ratio to the perfection with which they have carried their co-operative organizations. It may be said, but I do not believe that it can be successfully contended, that the system we have evolved which has grown up, makes for greater efficiency than co-operative undertaking. Dr. Erdman last night took us from the door of the producer right along through the many steps until we reached the consumer, and he very properly pointed out to us that in many of the industries, each and every one of those successive steps was carried on with a maximum efficiency, because, as he said, it was a case of the hound and the hare. The hare had to run for his life, and these private organizations making up these various steps, in order to save their lives, had to maintain a high state of efficiency. Perfectly true, but that is not the point which concerns the nation. You may have thirty steps in between the producer and the consumer, and each and every one of those steps carried on with the maximum efficiency, and yet the whole system be entirely inefficient—absolutely and completely inefficient. For if you have thirty steps in between where there need be only two or three, although the thirty may be efficient, the consumer pays more than he need, and the producer draws less than he should, and those two alone are concerned; for what the producer gets and what the consumer pays determines, to my mind, the efficiency of the organization from a national point of view.

Now I intend to go over some of the points which were enumerated last night by Dr. Erdman, and endeavour to show you that my opinion is these can be best accomplished by a co-operative organization and not otherwise.

Assembling products at country points and grading can be done by middlemen, has been done by middlemen, probably always will be, but I claim that it cannot be done as well, or as effectively as by a co-operative association. They are both absolutely essential. In this country grading of its agricultural products, to my mind, is absolutely necessary if this country intends to occupy any important place in the markets of the world. This country cannot afford to go along any longer and allow the reputation of her agricultural products to be at the mercy of any individual, or any set of individuals. Not that I am making any charges against any corporations or sets of individuals, but a country that has about seventy per cent. of its total exports coming from the farm cannot afford to let it rest in the hands of any man or any set of men to make or break her reputation on the markets of the world. Canada has too long permitted her products to go hither and thither all over the world simply as Canadian products, not grouped under

guarantee as to quality, consequently we have never established the reputation we would wish. If we study those countries which are our competitors which are making headway in the markets of the world, some just pushing us a little out of the markets of the world, we will find that in those countries there is not a pound of agricultural product allowed to go out of the country that does not go through the hands of government officials and bears government stamp as to grades. Grades and standards are absolutely maintained so that the foreign buyer when he wants a certain quality of product, all he has to do is to order it and he is sure of getting it and knows his customer will be satisfied. One of the greatest elements of success in capturing foreign markets is in having the products graded, and having authorities to see that those grades are always maintained.

Now, it is possible for private individuals to grade products, but in the efficiency of marketing products—and by that I mean marketing right from the producer to the consumer—there is no organization which should be and can be as efficient as a co-operative organization. If I am acting some place between the producer and consumer, it may be my wish to see the general quality and standard of the product better, but it does not really make an awful lot of difference to me; I can make just as much money probably in handling No. 2 butter as No. 1. If No. 1 label was on No. 2 butter, I would in this state of affairs be better off than if the business were better organized. But where there is a co-operative organization the producer is interested from the time the milk is supplied until the butter and cheese is consumed in Great Britain. He is interested at every step right along until the product is consumed. Then, I say you have a very high incentive for perfect efficiency, because after all the farmers of this country should remember not only their responsibility, but their interest, does not cease when they deliver their milk to the cheese factory. We have been too prone to look on it in that way. If we send poor cheese or poor butter or poor bacon to Great Britain, the man who suffers—and the only man who suffers, mark that—is the man who is marketing the goods back on the side line. The man in between can always be taken care of and always takes care of himself. So I claim that in order to build up a perfectly efficient marketing machine you must maintain the interests of the producer until the product is consumed, and the producer should never be satisfied until the consumer is satisfied, and when the consumer is satisfied the producer will prosper.

Grading can be done by governments or by private individuals, but grading can never be successfully and properly done except by producers themselves. The producers will resent a government interference, but if their own organizations establish their standards they can impose the will of the association upon the members and get results, and they can get results in six months which the government would not be able to get in three years. All history demonstrates it to be a fact that efficiency in grading can only be done by co-operative organizations, organizations made up and controlled and operated by the producers.

The matter of transportation is also one which can be very much better handled by a co-operative organization than by any individual. Certainly, no grower or producer can have very much influence in making more efficient our transportation. Mr. Mahony, from the Niagara Peninsula Growers, will tell you the troubles they have had in days gone by when individuals attempted to get efficient transportation, and how effectively an organization can handle these problems.

Now, as to packaging and locating markets. In the matter of locating markets is where I claim that co-operation shows up to greatest advantage. There is no farmer, there is no producer whose turn-over is sufficient to warrant him in

going out and exploring new markets. His turnover is too limited to make it possible, but we have a co-operative association made up of thousands and thousands of producers turning over millions of dollars a year. Such an organization can afford to survey the whole world, to keep in touch with all the markets of the world, and can afford to go here and there and explore new markets for their products. It can also put into operation methods which will retain the markets they already hold. I am convinced that if Canada is going to hold even her present position in the markets of the world, she must change her methods of marketing her products, or I very much fear she is going to find those countries that have adopted modern methods of marketing are going to gradually push her out of those markets.

The co-operative organization, strong, sanely handled, properly financed, can afford to put on campaigns and to increase the demand for products by increasing home consumption of products. The individual cannot do it. The individual concern, as a rule, will not undertake that. But take our cheese industry in this Province and look over the consumption per capita in Canada. Nobody will deny that the country would be very much better off if people ate three times as much cheese as they do, but there is no person to put on the campaign. Not only would the nation as a whole be better, but the industry would thrive. A big organization can go out and put on a campaign extending over several years and increase home consumption. I could tell you of numerous instances where organizations have succeeded in increasing consumption by two or three hundred per cent. So I claim that in this co-operative organization is far more effective, and we may expect it to be far more efficient than the privately operated concern.

The distribution and the financing were two other points touched upon last evening, and in these the private organization can in no way claim to be more effective than the co-operative. The producers of Canada, if they have faith in themselves and in their industry and organization, can finance it, and there is no operation too big or requiring too much money for them to finance, if they have sane, safe men at the head of them, and if they do not become too radical and run off at a tangent. In this matter of controversy I could point to case after case of co-operative effort which has gone to the wall, but I have never seen a single case yet if we had the possibility of studying it but we could put our hand on the weakness, and co-operative organization is susceptible to the laws of nature the same as any other organization. If they are improperly organized, if they are insanely operated, they are bound to fail; but that does not in any way affect the general underlying principles.

In reply to the contention of the efficiency of our present organization for marketing of our products, I would say that there is too large a percentage of the population, who are neither producers nor, I was going to say, consumers (although they individually are, of course), but there is too large a percentage of our people in between the producer and the consumer. They must be supported. Their business is perfectly legitimate, but we should sit back and realize that somebody has got to "pay the piper." History has proved that the piper is paid by the producer at one end and by the consumer at the other, and I say that with such a tremendous percentage of our people whose living comes in between the producer and consumer it cannot be in any way considered an efficient or effective organization.

In our farming communities we have people just as intelligent as the farming population of any other country, yet I have had people say to me, "You can never compete with New Zealand because of her climate." True, New Zealand may have a climate better than ours for dairying, but we have advantages—many of them—

over New Zealand which fully make up for our disadvantages. And, with our natural advantages, if we lose out in the race we have no claim against divine Providence. We have been given a fair show and if we do not measure up but let ourselves be pushed out of the markets there is no person to blame but you and me. There is no one else to blame if we fail to measure up to the progressive intelligence of the people with whom we are competing. We have been so conservative that we have failed to realize the changing of time and the necessity of changing our methods.

I have felt this of so great importance that I was delighted to know you had put it upon your programme for this meeting, and I am pleased that the President of the College has recommended to me that our teaching staff should be increased so that the principles of rural economics shall be taught to the boys who go through this institution. One of the reasons that we are behind in the race is because we have so lately come to realize the prime importance of it. It is nothing new with me. Over twenty-two or twenty-three years ago, right in front of the building there, I talked to the President of the College at that time along this very same line, and I am just as convinced to-day that I was right as I was at that time. We have too long delayed. Over in Denmark they teach the fundamental principles of co-operation in the public schools, and as the boys and girls grow up they know the effectiveness of co-operation, and they know the pitfalls and the dangers. Demark to-day is organized co-operatively in her agricultural industry from beginning to end, and her people would not think at all of carrying on operations in any other way. Only a few days ago I was talking to a gentleman from Denmark who is largely concerned in the dairy industry there, and he said such a thing as a farmer acting individually is almost unthought of. For instance, a farmer would never think of going out and buying a bull, but a ring of them would go out and buy a real bull and pay a real price for it. They have been so taught from childhood up that there is no trouble. The disheartening feature in this country is that you have to spend so much time and energy to convince the very people who will profit by it that it is right, but I know that at this institution the fundamental principles of co-operation in marketing will be taught, and I have hopes that before long it will be taught in the public schools. I have asked the Minister of Education to seriously consider putting in the hands of children in the public schools text-books which would give the fundamental principles of co-operation.

Before I close let me say to any of you who should become active in any of these organizations: Do not imagine that the moment you are launched all the trouble and worry is over and that you are on the high road to success and will encounter no obstacles. Any co-operative organization that is sanely organized along proper lines and with proper plans of financing is bound to succeed, but you are going to encounter innumerable difficulties. There will be opposition from various sources, and it is a godsend that it is so, because it keeps these organizations healthy and sane, and if not healthy and sane they go down and disappear, which is exactly what should happen. Our friend from the Niagara Peninsula will bear me out that in the first year of its life a co-operative organization has a lot of real work to perform, but I look forward to a great work being done in the agricultural industry by these co-operative marketing associations.

COSTS OF MARKETING.

Dr. H. E. Erdman, Bureau of Markets, U.S. Department of Agriculture, Washington, D.C.

I do not want to be misunderstood in what I said last night about efficiency. I have been teaching some courses on co-operation and marketing for a number of years in connection with my work, and have hinged it all around that point of efficiency, and I meant to put it plainly last night, although one or two remarks of the Minister of Agriculture, as well as remarks which I overheard among those in the audience, led me to think that perhaps I had not made it quite plain. What I had in mind by efficiency is that it should be the most efficient that can be provided. That may be co-operation, and I meant to make that clear. I mentioned a number of instances, and might have mentioned a thousand or more, and in order that I may not be misunderstood will mention some of these just briefly this afternoon.

One of the most outstanding instances is the American Cranberry Exchange, which is distinctly co-operative. A group of producers have gone together and they have evolved an efficient marketing machine. They put the product on the market in such a way that it satisfies the consumer, as shown by the fact that he pays for it the highest possible price. They have put the stuff in the wholesalers' hands in such a way that they are put up in more standard grades, etc., and what they have accomplished could not possibly have been done by the individual, but, nevertheless, they have performed the various functions I mentioned last night although they may be grouped in different ways. You have doubtless all eaten the product sold by the American Cranberry Exchange, the well-known "Eatmor Cranberry." Efficient marketing has put it on the map.

Some of you may have eaten cheese that comes into competition with your own cheese to some extent, "Mellow Cream" cheese marketed by the Wisconsin Cheese Producers Federation, which is another instance of co-operative merchandising performing the various services in a more efficient way than they were performed before. I might mention quite a number of others—California and Florida Fruit Growers' Exchanges, which I mentioned last night with some of their achievements, the California Associated Raisin Company, and the Northwestern apple growers organizations where results have been accomplished by co-operation. There are equally numerous instances where they have been performed by private agencies. The whole question is where can it best be performed, who will push the stuff the hardest, who will work most efficiently. I do not think we will ever come to a time when everything will be marketed co-operatively. I look for tremendous development of co-operation, but more as a means of bringing about more efficient marketing, than of eliminating somebody's profits or somebody's business.

Because of the fact that I am at present engaged with the work of ascertaining the costs of marketing, and because you are interested in that sort of thing, I have been asked to talk particularly about that phase. In my talk last night I tried to give a basis for the kind of discussion you had to-day, coupling up with the performance of the various services the idea of who is to perform them and showing what must be done in order that they be performed most efficiently.

There has been a good deal of misunderstanding about the whole question of cost. A good many have the notion that if you knew what it cost to produce some of these things your problems would be solved.

A letter came to me recently from a man who had that idea in an extreme form. He was going to get up a system of cost accounts in card form, and collect all the facts about the costs of production and marketing. Take for example, the cost of a loaf of bread. He would get the cost of producing the wheat, milling the flour, and baking the bread, transportation wheat or flour, costs of retailing and then he would have the cost of that loaf of bread. Then with his costs all on cards he would go out to buy. Upon being overcharged he would ask the dealer what the loaf or other article cost him. The dealer, of course, would give the wrong answer. Thereupon our friend would pull out a card and say: "There, you liar, is what it cost."

Now, as a matter of fact, there is no such thing as the cost of marketing. There are probably no two instances where it costs exactly the same, any more than there are two people in this room who are alike in temperament or appearance. That is true not only of the cost of production, but all the way along. Take, also, for example, potatoes, for which I happen to have the figures here. We made a study last year of a group of potato dealers, which showed this cost just previous to the drop in prices of the recent ten or twelve months, and those costs varied from 45.8 to 86.7 cents per hundred pounds for eleven dealers. Here were eleven dealers operating in very similar businesses, and yet the cost of distribution varied from 45 to 86 cents per hundred pounds. We found the same thing in the case of milk where the cost varied decidedly. We found the same thing in the cost of marketing live stock, where again, we have the widest kind of variations.

The costs of our co-operatives vary pretty much the same way, and the question of whether some co-operatives are going to persist or not will hinge right around that question of whether costs are large or small. Those with the large costs are going to drop out, and those with the low costs are those efficient enough to meet the competition of the man trying to do business for himself.

Now, then, what makes up the costs. Again I happen to have figures for potatoes, which I have in two different forms, and will give them to you in terms of the consumer's dollar. That is, out of the dollar which the consumer paid for potatoes during the crop year of 1919-20, the grower got approximately 48.9 cents, based on figures we got from something like seventeen dealers. During a period of rising prices, in that particular instance the various persons concerned got something like 21 cents in profit. The freight cost 5.2 cents. The actual money paid out for services of various kinds—bagging, crating, aside from freight —was 24.4 cents. Or put the matter another way. The retailer received from the consumer $1.00 for a certain quantity of potatoes. Now of that dollar he took 11.3 cents and turned it over to his clerks and to the other people from whom he bought services; then he took 6.9 cents and put it in his pocket. He turned the rest of it over to a jobber and that man in turn took 5.6 cents for his expenses and put in his pocket 4.9 cents, passing the rest on. The wholesaler and country buyer paid for his various expenses 7.5 cents. He put in his pocket in this case 9.7 cents and paid the railway company 5.2 cents. That left for the grower 48.9 cents.

We were able to get data for some co-operatives, and apparently as nearly as we could get at it those particular co-operatives were performing the services no cheaper than were the other dealers. There was one difference. The co-operatives were putting some of those profits into their own pockets, which gave them some advantage. On the other hand, they could not reach all the way, so that some

of the profits still went to private concerns because the farmer could not reach far enough.

I have here another set of figures compiled by the South St. Paul Live Stock Exchange based on 100 cars of live stock marketed by co-operative shipping associations through the St. Paul Commission Companies, and sold to packers there. In this case, taking 100 as the basis, the dollar divided is the dollar which the packer paid for the animals which he bought to slaughter. Out of each dollar 90.36 cents went to the producer, 5.16 cents for freight, .66 cent for yardage, .19 cent for hay at terminal, .50 cent for corn at terminal, .03 cent for bedding at terminal, .08 cent for weighing, .01 cent for yard insurance, 1.46 cents for commission for selling at the yards, .01 cent as a pro-rating charge, and 1.54 cents as commission to the local manager of the co-operative. There again is given a picture of what some of the marketing costs are composed of.

During 1920 the Bureau of Markets made a study of the cost of retailing meat in 1919, and got the figures from several hundred retail meat dealers. Here are figures for 120 stores making deliveries to family trade in 1919. Again taking the dollar as a basis, out of each dollar's worth of meat sold those retail meat dealers got 19.43 cents out of which to take profits and cover their expenses; in other words 19.43 cents was the gross margin. The main items were rent 1.25 cents, refrigeration .79 cent, interest on money borrowed and on investment .56 cent, salaries and wages, including a normal wage for the manager or operator himself, 10.68 cents, for other expenses 4.02 cents, and 80.57 cents for meats, leaving 2.13 cents as net profit.

Last year there was a good deal of criticism about retail prices of meat not dropping at the time wholesale prices of meat and live stock were dropping, so that at about the time I came to Washington we found great interest in price ratios. One of the things we worked up was a follow-up on this retail meat study. A questionnaire was sent to these same dealers asking them to give comparative prices for this year and several years back of the items of expense, which in 1919 constituted 78 per cent. of the total, such as rent, wages, ice and fuel. The result of this study showed that while prices had actually dropped on meats at wholesale, the costs of the retail dealers had actually been increasing during the same time, and at that particular time they were apparently not profiteering though some probably were, and since then meats have come down very considerably at retail. However, it took some of the wind out of the sails of some of the people who were accusing a lot of retailers of profiteering, but the trouble was there were a lot of expenses which should have been reduced. It was almost impossible to reduce men's wages. You notice that in this case salaries and wages were 61.7 per cent. of all expenses.

To those of you who are interested in costs, another question comes up. A good deal of impatience has been shown because the Department of Agriculture and others have not come across with a clear statement showing that it costs so much to produce a product. May I call attention to the fact that the question of getting at cost is extremely complex. In the first place, we have such things as joint costs. The best illustration I can give you is the cost of producing a pound of wool. It must be decided what it costs to produce the mutton under the wool, and the hide between the two. What does it cost to deliver a quart of milk on a wagon hauling a load of milk in quart bottles, in pint bottles, in half-pint bottles, some half-pints of cream, a can or two of milk in bulk for restaurants, a

few pounds of butter and maybe a few packages of cheese—now what does it cost to deliver a quart of milk under those conditions?

Take the question of the relation between costs and profits. The range of costs that I just mentioned arises very largely out of differences in men or differences in their situation, or in their volume of business, or a number of other factors, and out of those variations arises the profit to the middle man or the savings that your co-operative makes. In other words, where you have a number of agencies performing similar service, you have a variation in costs. Somewhere in there the market price becomes established under competitive conditions and ordinarily so established that you have most of these men making a living. The fellows who are right near the top, whose cost is close to the amount they can get when they sell the stuff on the market, make no profit; they may be able just barely to exist, or may be actually consuming some of their capital in order to stay there. Now the rest are making more profit, are producing at less than market cost, and that is where profit gives an incentive to efficiency in private business, and it is at that same point that your co-operatives fit in. Somewhere in there they fit in and make or do not make a saving, according as their costs are below the market price.

The question sometimes arises in that connection as to who gets the benefit of co-operative effort. Now, of course, if your co-operative is small and does not affect the wholesale price any, your wholesale price will be established on something like a world market. To the extent that that is true, if your co-operative can cut down selling expenses for a small group of people, it does that at so much saving to them. Those people may find it more profitable to go on producing milk, let us say, but they are a small group and do not affect the market, so they get the saving and keep on getting it. But suppose you enlarge that group of co-operatives, then what happens? Again they make the saving. Does the consumer get any of it? Not right away, but just as soon as this large group finds that much more profit in it, the supply will soon be increased. The increase comes about in several ways. They will increase the quantity of milk produced by taking better care of the cows, by feeding less to calves, by using less on their tables, by buying another cow or not selling the old cow this year, all of which will increase the supply and bring down the wholesale price. And then the consumer begins to get the advantage of producers' co-operation. Thus the consumer must get, and will get, the advantage of any large scale co-operation through reduction of costs which in turn affects the total wholesale price. But the farmer or co-operator is the first one to get the benefit and gets it for some time before the wholesale market is affected.

I have sometimes heard men criticized for making a profit. I do not believe it is criminal to make a large profit, provided that profit arises out of efficiency on a competitive market. I happen to recall a community in which I had given a talk on co-operation. I had pointed out the advantages of co-operative marketing of grain, and when I got through one man got up and said he was thoroughly convinced that I was right, and went on denouncing a local dealer. I did not know the conditions there, but assumed they had some sort of elevator. I had only talked about co-operative elevators. They were particularly interested in organizing a co-operative company, and I told them what they might expect of such a company and how to form it. This man got up and denounced their local elevator man for making exorbitant profits, but incidentally also mentioned that he was paying a higher price than I knew of anywhere in the vicinity. After ask-

ing them a few questions I found they were dealing with a thoroughly efficient man—with a man like the one I mentioned last night who could sell his oats on the market for ten cents more than the other dealers. I told them they did not want co-operation. That man was making a profit, but he had been paying for some time a higher price than any dealer around. I told those men that that man was a benefactor for he was giving them a superior service and making a profit at it, and that this profit came not out of the producers but out of savings this man made on expenses of operation or out of gains on efficient selling.

Now, as to the value of cost data. I have already mentioned the ratio method of determining costs, of milk for example. I want to speak first of the value of data on cost of production and then cost of marketing. I believe the biggest points of value in getting costs of production, first, that they make possible an analysis leading to changes in lines of production; for example, careful analysis of costs of production will soon show a man whether he can continue to produce a certain product or help him make a decision when prices change. Second analysis leading to greater efficiency. In other words a man may learn whether it is costing him too much to do a certain thing. When a man learns that his neighbour's cost is less for doing the same thing, he can find a remedy and reduce these costs.

I am thoroughly convinced that the thing the Minister emphasizes must be borne in mind, but so long as we are exporting and selling on a world market the way must lie towards efficient marketing, whether it be co-operative or not; in addition we must go still further back and make the production efficient for every time we can reduce the cost of producing or marketing, that profit comes back to us as I have already explained.

The third factor of value is that it makes for greater certainty and greater ability in collective bargaining. The ratio method brings your cost up to date with approximate accuracy and gives you something to work on during periods of stress particularly, or in case of argument. You cannot, however, sell things on the basis of cost of production. It never has been and never will be done, but when costs are high and you know they are high that sort of argument always helps.

Fourth, justification before the consumer of prices asked. Consumers are more indulgent towards a price increase asked by the producers when they can be assured that the costs of production make it essential. When the consumer sees that the men who are making the profit are the efficient men, and not all of them even, then he permits the price increase with less objection.

Fifth, cost data. It may actually influence the price. First, where price fixing is involved, and second, where prices are influenced by changes in production resulting from a knowledge of costs.

As to the value of costs of marketing data, the first and second are essentially as given above as points one and two, I might say here that cost of marketing data should be gotten from the point of view of promoting efficiency, of finding out where the weak points are and opening the way for improvement.

In the third place, cost of marketings data should help eliminate cut-throat competition. A good deal of competition in the business world is based on inadequate cost data. Some men assume that because the big dealer can sell at a certain price they can, and even think they can sell a little cheaper. They leave out some items of cost and all too often go in to bankruptcy, which after all, someone must pay for sooner or later. Fourth, it indicates a point at which con-

structive thinking may begin for those seeking to remedy conditions. For those who say our marketing system should be remedied here or there, it gives the information on which they can fortify their judgment. Fifth, the justification before the public of prices asked or taken by various dealers.

Another thing which will come up in connection with cost of marketing question is how to get costs. We are following two distinct lines. A very few States have passed laws which make it compulsory for any individual engaged in business to give the Marketing Bureau any information which that Bureau might ask for relevant to the business, so that the Bureau of Markets can get a man by the nape of the neck and make him sit down and dig up whatever he has on record. Another method is that of getting the co-operation of dealers, pointing out that it is worth while for them to give out cost data to be properly analyzed, not with the idea that we think they are making too large profits but with the idea that we want to get at the facts. When there is real crookedness you cannot always get at it in this way. It is more or less an open question as to which way should be followed. The Bureau of Markets and Crop Estimates is following the second plan.

One other remark in conclusion: Keep your mind on the fact that, after all is said and done, the biggest savings are, for the most part, to be made right in your home community. It is all very nice to talk about national organizations, but remember that, your national organization cannot exist unless each individual in that organization does his or her part. You cannot get away from that. I say, by all means, remember it is not a question of electing somebody and sending him to some large city to set up an office; it is after all a matter of building up your local organization, making sure it is functioning efficiently. You must have something substantial as a basis for a national or provincial organization. You can't build without a good foundation, and you can't build from the top down. One of our co-operative leaders recently put this point tersely if somewhat inaccurately when he said that the only job he had ever known to be successfully done by starting at the top was that of digging a grave.

CO-OPERATIVE MARKETING.

T. J. Mahony, General Manager, Niagara Peninsula Growers, Ltd., Grimsby.

I am pleased to have an opportunity of addressing the students and ex-students, because the two co-operative companies in the Niagara District—the Grape Growers' Company and the Niagara Fruit Growers—owe much to the graduates of this College. With regard to co-operation in the Niagara District, it is, so far as the whole district is concerned, of very recent formation. We have had three or four small co-operative companies in the Niagara District, one at Winona, one at Grimsby and one at Vineland, with a total membership of fifty-seven. Any influence they had on marketing was very, very limited. They had no great effect in regulating prices or doing any really big things towards putting the fruit market on a businesslike basis.

In 1919, the idea was conceived of organizing the whole district along co-operative lines, and that in connection with only one variety of fruit—grapes. That year the growers, who made comparisons of prices received for grapes, with those paid in the United States felt they were not getting a proper price for their

grapes. They resented the condition which had existed for a number of years whereby the wine manufacturers—who took about one-third of the crop—went out early in the season and fixed the price, the growers having nothing to say about the price which they should receive. In 1920, when it was found that higher prices were being realized in United States' markets than were paid on this side, it was felt that the time had come when the growers should have something to say with regard to the prices paid for grapes which they were producing and selling and that the entire right to dictate and fix prices should not rest with the man who was buying. With this idea in view, three or four local districts got together and formed local associations, and these constituted what we called our Executive Committee. In 1919, we had endeavoured to get into conference with fruit dealers of the district and wine manufacturers for the purpose of discussing the question of what would be a fair price.

We met with no success, our letters were not even answered, and it being too late in the season to do any effectual work we found we had better leave things over for the following year. In the early part of 1920 it was decided that it would be well to take some definite action, and when we undertook to get some information with regard to grape growing in the Niagara District found none available that could be considered accurate. The opinion was that there were about 15,000 acres and that 25,000 to 30,000 tons of fruit were harvested yearly, but no person could tell us definitely whether this was so or not. At the first meeting of the Executive held in January 1920, we decided to secure the services of five grape-growing townships, and when a census was taken and figures available we were amazed to find that the total acreage was only about 4,500, and that owing to small prices obtained for years many vineyards were neglected and that the probable tonnage amounted to about 10,500 or 12,000 tons in a normal year.

With that information we sent our representatives to the eastern States to find out methods of co-operative marketing there, and the information that we received convinced us further that we were not getting a fair deal from either the fruit dealers or wine manufacturers in the price paid for our product. Therefore, we held meetings throughout the district and succeeded in organizing from Hamilton to the Niagara River some twelve local associations, these being represented on the executive of our Central Association. In those meetings which we held throughout the district we met the growers, made them acquainted with the facts as we had learned them, and succeeded in convincing them that it was not to their advantage to make contracts with any dealers until we had a chance to arrange a conference and arrive at a suitable price. We finally succeeded in arranging for a meeting to take place in July, 1920. Before that meeting was held, the season was sufficiently far advanced to make it known that the Niagara District was going to experience the greatest fruit crop in its history, and also the greatest basket famine that the district had ever had. The wine manufacturers felt the conditions played into their hands, and as there were no packages available they would be able to buy grapes at their own price, and consequently would take no risk about fixing or discussing prices with our Association. They broke faith with us and cancelled the meeting. We felt it was a challenge to us and we did not hesitate to accept that challenge.

We called a mass meeting for the 7th day of August, and so well was it organized that we had at that meeting over 250 present, and when a vote was taken for the co-operative marketing of our grape crop only one man of the 250 voted

against it. On the 26th day of August, we secured our charter for a company and on the 17th September, we opened an office in St. Catharines. Between then and the 11th day of November, we handled 440 cars of grapes, 341 of which went to the United States market. That was the first time in the history of the Niagara Peninsula that grapes in any quantity had been sent on to the United States market. You might ask how we handled those grapes in view of the fact that there was such an evident shortage of baskets. With the help of the American Fruit Growers' we practically raked the whole of the United States to get baskets; we went as far south as Florida, we got them from Indiana, Ohio, and even Michigan, where they needed them even worse than we did. We imported hampers and sold the grapes in these on the American market, receiving an average of $20 a ton higher than we could get in our own market.

Now that is only one variety of fruit, and as most of you know it is probably one of the easiest to handle. Grapes, after they have properly matured, will remain on the vines without loss for two weeks, if necessary. They will also when picked and shipped to destination, remain in stores for a week or ten days without injury, and for that reason we look upon them as one of our most staple varieties of fruit. The marketing of tender fruits is a much more difficult proposition. Many fruit growers in the district, notwithstanding their experience in 1920, did not look with very much confidence on forming a co-operative company to market all other varieties of fruit. I may say that if we have such a company at the present time it is due to the Minister of Agriculture, who was responsible for the first organization meeting. That meeting was called at his instigation at Vineland on the 26th November, 1920, and a committee was formed there to go into the matter as to the advisability of forming a company. That committee reported in Hamilton on the 28th of December, their report indicating that such a company would be a feasible proposition. The Provincial directors were thereby appointed to canvass the district and see how many growers would be willing to link up with such an association.

From the first we met with difficulties which has only proven that the growers of the Niagara District will stick together regardless of difficulties. One of the first difficulties was caused by the resignation through illness of the general manager, Dr. Creelman. The company for several weeks had no one of experience to direct it. The season from the beginning was an abnormal one, the hottest in thirty years. There was trouble with the dealers and with the commission men who had made money out of the old system. We were misrepresented to some extent, and when we started marketing operations in the early part of the year, found the impression abroad that we were out to boost prices. It was not pointed out that our principal object was to eliminate waste and to establish proper grades, but, notwithstanding the misrepresentations, our company was fairly successful. Our greatest difficulty was caused by the abnormal season. Under normal conditions, the tender fruit crop of the district is handled in about four and a half months—from June to the last of November. This year the fruit crop had to be handled in about three and a half months. On October 3rd, practically all tender fruits were off the trees and marketed, so we had to crowd into three and a half months a season's operations, which in a normal year would have been four and a half months. One of the principal difficulties and source of loss was the fact that owing to the fruit ripening too quickly it had not the same shipping qualities. We also had to contend with the market conditions created by the depression which the country is passing through. We had, therefore, a much con-

tracted market, and in addition to that we had, of course, the increased transportation charges. It cost us this year to lay down an eleven-quart basket of fruit in Winnipeg, forty cents. Last year it cost us twenty-two cents. If you contrast the prices with those of 1921 and those of two or three years ago you can understand that it is not the fruitgrowers who have received more money for the product which they sell. We also had to pay increased prices for icing our cars and in some cases could not get sufficient ice. The increase amounted to something between $300 and $400 a day. Still, notwithstanding the fact, I am pleased to say that the Company has been fairly successful, and I feel confident that when the report of our year's business is given and explained to the 635 members of the Company, the reasonable ones at least will be satisfied.

We have throughout the Province of Ontario thousands of acres of apple orchards which are neglected, largely because they had not given a fair profit to the producer. This is almost directly traceable to market conditions. We have applications from several districts of the Province at the present time which are anxious to get in touch with us and arrange with us to market their crop next year. If they have the apples to market and will put them up under our inspection, have them graded and packed properly, we will be only too glad to market them. I feel satisfied that with the co-operation which should exist in marketing in this Province, they will receive prices which will encourage them to take proper care of their orchards. I may say with regard to the apples we have sold, especially those box packed, we have received compliments on every side. We have been told by some that they were equal, if not superior, to any that came from British Columbia, and if that is so in our first year's operations, we should be able to show much better results in future years. If there is any person who would like to get in touch with our Company we would be only too glad to co-operate with them.

We sold something like ten carloads of cabbage, twenty-four carloads of canteloupes, forty carloads of cherries, thirty-eight carloads of cucumbers. There are the two co-operative companies, the Fruit Growers and the Grape Growers. As a result of an arrangement made between the two companies last spring, the understanding was that all contracts of growers should be made with the Niagara Fruit Growers Company, but that selling on the Canadian market should be exclusively in the hands of the Niagara Peninsular Growers. The Grape Growers sold direct to the wine manufacturers and took care of the trade on the United States side. About 900 tons were sold to the wine manufacturers this year and about 3,388 tons on the American market. We sold 564 cars of peaches, and in this connection would like to make a few remarks which indicate that a good many do not know very much about their own business. Shortly before the peach crop ripened a canvass was made of the district, and the highest estimate was 300 cars. As you know, the fruit crop was abnormally light, and at that time it was estimated at about twenty per cent., but when the crop ripened instead of 300 cars we had 564. The peach crop this year was at least three weeks ahead of normal time, and people will not buy fruit in any large quantity very much ahead of the usual season. The Elberta peach crop came in at the time the Toronto Fair was on, and when business was considerably disorganized all over the Province some days we had estimates from division managers that they would have thirty cars, and we ended up by having to handle as many as 45 and even 50 cars. Our principal difficulty in the marketing of these peaches was that we had no place to put the surplus pickings of the day. We would get an estimate that there would be 30 or 35 cars and they would be sold, then on towards evening when the day's business was done so far as

selling was concerned, generally we found a surplus of fifteen or more cars on hand, which had to be disposed of in some way. Unfortunately in the system which has prevailed for the last thirty years or more, there has been no cold storage system to take care of this surplus, and consequently we had to slaughter the crop. We prolonged the season to some extent by storage in Hamilton, and we received about 75 cents a basket more than we would have obtained at the time the fruit was picked. I just mention this to show the tremendous advantage it would be to have adequate cold storage facilities. Had we had these facilities it would have been a decided advantage to the consumer as well as to the producer. It would have meant that the growers of the Niagara District would have realized from $75,000 to $100,000 more for their fruit than they did.

We also shipped 11 carloads of peppers, 74 of plums, and 571 of strawberries which was considered only fifteen per cent. crop. All told, we handled 59 different varieties of fruits and vegetables and a total of about 1,700 cars.

Another difficulty we had to contend with was the fact that the jam factories were loaded up from the previous year. The high price they had to pay for sugar meant a high-priced article when processed, and they carried over to last year large quantities which they could not sell, and consequently there was no encouragement whatever for them to put up any additional products this year. This made a very substantial difference to our Company in the marketing of our products. As you know, when it is hot weather, there are always some products which become soft, and the factory is the only outlet for them.

It might be asked what we consider, as a result of our experience, the essentials necessary in order that co-operative marketing of fruit should be successful. I would place grading first. If grading is important in regard to other lines, it is vitally important in regard to marketing the fruit crop. The growers in the district, as you know, have been marketing through some twenty or thirty dealers, and in most cases the dealers paid the minimum price. At any rate, there was no encouragement to the grower who wanted to put up a good article to do so, as he did not receive the difference in price. In our system of operating the prices of all products are pooled every day, and a proper price paid for the proper grading. Considering the fact that a considerable number of growers had never before graded their crop, we knew it would be a very difficult matter in one year's operations to get the growers to put up fruit according to a uniform grade. I may explain that is one of the reasons—the principal reason—why we did not spend money in space advertising this year. The value of advertising consists in being able to deliver the goods you advertise, and we did not feel that it was safe for our Company to make any claim with regard to product, this year. We feel now that our growers are sufficiently educated to the importance of grading to put up a product next year which will justify us in doing at least a reasonable amount of advertising.

Now another requisite is adequate cold storage facilities. Although our Company has been in existence only eight months, a group of growers around Grimsby have taken over the large Government cold storage warehouse there and have reconstructed this at a cost of about $75,000, with ice-making facilities and also have a packing house in connection with it. We expect this will be of great assistance to this section. One of the essentials of the district is that these storage plants will be so located that they will serve a radius of about ten miles. We should have one at St. Catharines, and are at present trying to interest local capital there to construct a cold storage warehouse and have an artificial ice rink, as in Grimsby.

We should also have one at Burlington. As you know, our territory extends from Burlington to the Niagara River, and we feel that with three cold storage warehouses so located the requirements of the district would be fairly well taken care of. Cold storage is absolutely necessary for long distance shipments of fruit. The losses this year in western shipments were due to the fact that we could not pre-cool fruit before being shipped, and if we are going to get any distant markets, or even hold our own, we have to recognize that fact and see that our fruit is properly pre-cooled, packed and shipped.

Another thing which is absolutely necessary is rigid inspection of fruit. During the past year we had a couple of inspectors representing the Company going around inspecting fruit as it was loaded, but this was not sufficient. Next year it is our intention to have one of our own inspectors in every shipping district, not only to examine the fruit at the shipping point, but to visit packing sheds to see that an honest pack is put up. We found that those who had not been accustomed to grading had difficulty in packing. They were not dishonest but were ignorant of the requisites necessary in the proper grading of fruit. In addition to that inspection, we feel that there should also be Government inspection of every carload of fruit loaded in the district. If we have Government inspection and have a certificate stating that it is loaded in proper condition, properly graded, and that at the time of its leaving the shipping point is in A1 condition, we would get away from a tremendous lot of loss, of misunderstanding and disappointment. At the present time and for years past it has been the custom of dealers to make adjustments of claims wherever asked, this being one of the factors we had to contend with. Certain shipments were graded in first-class condition when loaded and so reached their destination in first-class shape, but the person to whom they were consigned made application for adjustment. With Government inspection we could make out f.o.b. sales without any danger of having disputes afterwards or claims for adjustment which were not justified.

These are some of the principal points that must be considered in co-operative marketing. There are others which may be interesting to you, and if there is any person here engaged in other lines of production who is in any way doubtful about the advantage of co-operative effort, I will say that I am convinced that, so far as the marketing of fruit is concerned, it is the only way we can accomplish big results. As has been stated by the Minister, and I think the point is very well taken, if we want to be successful we must imitate our ablest competitor. We know that British Columbia is our greatest competitor in apples, and the chief reason is that they grade properly, ship under ideal conditions, and put their product on the market in a superior condition to our own product grown within ten miles.

CO-OPERATIVE METHODS.

R. D. Colquette, Professor of Marketing Economics, O.A.C., Guelph.

I once heard this story from a man whom I met when travelling and which was based on his own experience. He had lived until well on in middle life as a practical farmer, and then suddenly found himself elected to a responsible position in a farmer's organization, which made it necessary for him to move to a city of considerable size. But he never took kindly to city life. Often he would spend a week-end with an old farmer friend of his. He would reach the farmer's home in the afternoon, and they would spend Saturday evening talking and smoking by

the kitchen fire, and during Sunday he would look around the farm. One of these visits took place in the early autumn, when the mornings were chilly. As he was walking around that morning he came across a litter of Yorkshire pigs, about six weeks old, all huddled together. He said to his friend, "There's a great example of co-operation, they're keeping each other warm." "Yes," said the farmer, "but do you know, not one of those little fellows got in there to keep the other fellow warm." Those pigs have after all an individuality of their own; they like their individual liberty just the same as most farmers. They do not pile up that way in July and August, but when the winds start to get cold you see them huddled together. And it is just that way with farmers—when the winds of adversity start to blow they begin to huddle together.

Co-operative methods in Denmark grew out of adversity, following the war of 1864 with Germany. I do not want to be understood as disparaging the thorough study of what they have accomplished. I think their achievements bear great lessons for us, but I do think we could also pay a good deal of attention to the achievements of co-operatives on this continent, especially in the United States. The American people are more like ourselves, and after all, Europeans are not like ourselves. A great many of them have the peasant outlook; the Canadian and American farmer are alike in that they have not this outlook. I was impressed with the truth of this when visiting several local fairs last year, throughout some of the corn states, where I came into actual personal contact with hundreds of American farmers. They are men similar to ourselves. From that aspect, you could not tell whether a fair was being held in Ontario or in the United States. There was the same outlook on things, and the problems are very similar to our own. So I think we should give particular attention to some of the successful co-operative associations which have been developed in the United States. I am glad in that connection to find Dr. Erdman is here from the United States so that we can have interchange of views on these subjects.

There has been developing in the United States a distinct type of co-operative association. The most successful of those associations, and practically the pioneers of the big new co-operative move, are in California. This may sound far away, but it did not seem so very far away when I was up in Grey County last week. I went into a local store and asked for apples. The man had no apples, but could give me all kinds of oranges; and I seemed to be closer to the orange groves of California than I was to the apple orchard of Ontario.

I want just to emphasize here a few of the characteristics of some of the associations which I visited in California a year ago last winter. I had an opportunity which I valued at the time and since, of spending about seven weeks along the Pacific Coast, from British Columbia to California. The British Columbia apple is grown in the Okanagan Valley and marketed by a co-operative association. I might note here that the Okanagan apple growers were several years ahead of Washington and Oregon in adopting California methods of co-operation. They started in 1913, and only during the last three years have the Washington and Oregon growers adopted that particular kind of organization.

The first principle I would lay down then, is that there must be felt a distinct need of co-operation. Professor Graham, of the Poultry Department, in talking the other night mentioned an incident which I think rather interesting. He said a man from California had told him that among producers there must be not only the desire for co-operation, there must also be the need for it. That is one of the things which I found common to all these successful associations. Being connected

with the *Grain Growers' Guide* at the time, my duty was to investigate and write them up. I investigated about eighteen of them and in looking over the articles the other day I found that every single one of them arose out of adverse conditions. In relating the history of these associations I had invariably to recount the distress in which the growers found themselves, and in which they turned to co-operation for a way out. Through co-operation they have worked their way out.

Another general principle that is recognized by all the associations, no matter how they may vary in form and organization and method of finance, is that they recognize the limits of the field in which the co-operative association can function. In reaching the consumer an agricultural commodity may be said to have passed through two distinct stages. In the first stage it is collected, graded, packed and forwarded to the wholesale market of the country. After it reaches the wholesale market the stream of product starts to divide and sub-divide, and you have here the reverse process of what takes place on the other side of that market. Now it is within that first field of operations that a co-operative marketing association can most economically function. Its function is to collect, grade and forward the product to the wholesale market, and to effect the greatest possible economy in getting the product to that market. The associations engaged in those functions, however, do not advertise to the man to whom they sell—they sell to the wholesaler, but advertise to catch the eye of the final consumer. The idea which they follow is this, that there is a wholesale price level set in response to the law of supply and demand. They increase the consumption of the product by educational advertising so that the demand will play more forcibly on that central market, and then by centralized selling through their organization are able to realize the increased wholesale price minus the bare cost of getting the product to the wholesale market.

Some supplies are distributed. A marketing organization can be worked backward, so to speak, and members may buy supplies through their own associations in bulk quantities. The distributing business, however, is usually done through a distinct branch under separate management.

Another characteristic of the associations that I have visited is this, that they are each founded on a special industry. The citrus fruit people have their own organization, handling oranges, lemons and some grapefruit. The prune and apricot growers have a single association handling these two products because they are processed and handled in a very similar manner. The raisin growers, the peach growers and the walnut growers have each organizations of their own. It is now generally conceded that there has been too much sub-division in California, and that one association can handle the greater number of products. They are probably not functioning as economically as they might on account of being too finely organized. Some more recent organizations are widening the scope of their efforts. Oregon growers are organized to handle all kinds of fruit both fresh and dried. The Okanagan United Growers is another example of an association handling a wide variety of fruit products. The idea is this, that you have to have your organization formed to handle products which follow similar channels to market and which meet with similar marketing problems.

The associations handle only the product of their members, who must be actual growers of the commodity handled. If a member ceases to be a producer he is suspended, coming in again if he becomes a producer. On the other hand, the association does not handle anything but produce from its own members. The only exception I met was in the case of the Okanagan United Fruit Growers, which does purchase some vegetables for shipping to the prairie markets.

The products are pooled and merchandised. It is necessary to pool the product and take the average price received on the market in order to get the control of the selling in the hands of your central management. The member has to give up to the association the right to sell his product. Some farmers say they would never do that, that it is a violation of their individual independence to give up to anybody the right to sell the product of their labor. In these associations, however, we find just as independent minded men as you will find anywhere, men who do not feel they have sacrificed their rights. It is just as it is when having a deed or a will drawn up, you have to go to a lawyer. There are innumerable things for which a man has to call in expert assistance. A man does not give up his independence when he calls in a plumber to fix the plumbing. The same principle applies in any one of these institutions. They call in expert men who make a special study of the marketing of the product, and then give up to these men the right to sell that product. Expert salesmen are engaged by them and they are paying for and receiving the benefit of their expert knowledge.

Another characteristic of the associations I have visited is that they have all adopted the contract system. The members sign an absolutely binding contract to sell all their product through the association. There are two types of contract in operation. The first is the one used by the California Fruit Growers Exchange, known as a self-renewing permanent contract with withdrawal privileges. It continues from year to year, but the member has the privilege of withdrawing at the end of any year, by giving notice within a certain definite period. This type of contract was not considered stringent enough by some of the growers down there, and the raisin growers made a departure in adopting the term contract. Their contract binds the members during a certain period of time to market all his product through the association. The term is generally for five years. The raisin growers' contract is registered in the county office. It forms a lien on the land and if you buy a member out you are bound by the terms of his contract. That is the most stringent contract I know of. The prune and apricot organization decided that was too stringent, and dropped the lien features of the contract. When the term of years for which this type of contract runs expires a renewal campaign is put on. There is a tendency toward adopting a longer term contract in order to avoid some of the expense of these renewal campaigns.

I will not go into the contract system and give all the arguments which are given in favor of it but will mention a few briefly. One is that when you start out to reorganize you can decide by aid of experts how large a proportion of the crop you should handle in order that there may be a reasonable chance of becoming a business success. Then as the campaign proceeds you can see just how far you are progressing, and whether or not you are obtaining sufficient volume to warrant entering into the business. So far as I know, all have secured their objectives, although some have had to modify them. That is the case with the Washington Wheat Growers, who started out with an objective of half the crop signed up in six months. Later they had to modify it and give themselves a longer time, and it took them, in fact, about a year and a half to reach that objective, but at present they are engaged in marketing the wheat crop of Washington, Oregon, and Idaho and making a success of it.

Another way in which the contract helps an association, so the managers assured me, is that it helps to estimate the volume of business from year to year in advance and know what their future acreage will be. For instance, the manager of the Prune and Apricot Growers showed me through his office system.

Naming a certain district, he said to the clerk in his office, "How many prune trees will come into bearing in the ( ) district in 1923?" They had one of these modern office card systems, and in less than a minute she answered his question. He asked several questions, and she had the information right there. They keep absolute tab on every tree planted so that they know exactly what the acreage will be, what, under normal conditions, the crop will be, and how to extend their markets by advertising and other means in order to take care of prospective crops in future years.

The main benefit, however, of the contract system is that it relieves you of this eternal dickering for each load of produce when it is being delivered. Under the contract it is delivered and that is all there is to it. And I may say that from the very beginning the contract should not be allowed to become a "scrap of paper." The California Associations enforce them through the courts when necessary. Then, with the contract with the members signed so that they are assured of delivery, the Association can turn all its attention to efficient marketing. Several of the managers assured me that this was a great help to them in leaving them free to give attention solely to the marketing of the product.

There is only one more point that I am going to mention at this time, and that is the question of efficient management, and will only briefly touch on that. It is now generally assumed that associations must have efficient management if they are to operate successfully. One Californian association pays its manager $30,000 a year; the manager of another association secures a salary of $27,500, another $20,000 plus a certain commission. One Poultry Producers Association (an organization, by the way, largely confined within one county) pays its manager, a man named Barber, $10,000 a year.

The matter of financing I shall take up to-morrow afternoon, when I am going to give you an outline of the organization and development of the Okanagan United Growers, with headquarters at Vernon, B.C. They have one of the finest co-operative associations in Canada, I think, and equal in their organization to any association I have found in California.

THE WORK OF THE SOLDIERS' SETTLEMENT BOARD.

Major John Barnett, Chairman, Soldiers' Settlement Board, Ottawa.

There are a variety of reasons why the work of Soldiers' Settlement should be interesting to all Canadians. In the first place, we have expended some $86,000,000 of public money, and have established on the land some 27,000 returned soldiers, and those two things in themselves are sufficient to warrant the attention of thousands of business men and agriculturists throughout Canada. There is another reason, also, why the work of this organization deserves some consideration from those interested in agriculture and agricultural problems, and possibly, if I may say so, a special reason why the work should appeal to an organization or to a gathering such as this is, where experimental work and experimental problems constitute so large a part of your programme. The Soldiers' Settlement Board has not been experimenting in agricultural problems, but it is, particularly in its western aspect, an experiment in agricultural colonization, and like in all other experiments mistakes have been made.

But because it is an experiment in the larger aspect of agricultural colonization and soldiers' settlement, it has a particular interest, or should have, to Cana-

dians. I think that business men are generally agreed that the solution to some of our problems depends upon our obtaining an increased producing agricultural population. The operation of the Soldiers' Settlement Board has given some demonstration in how to settle and how not to settle.

There is also another reason why the work of this organization should have more than peculiar interest to most of you in this audience, and that is because of the large number of your graduates that are employed on our staff. I understand that we have some 76 or 78 graduates or under-graduates of agricultural colleges in our employ, largely in a field capacity, a very large number of whom come from your own institution here. We have also received in our work in a very large measure the benefit of co-operation and assistance from this institution, and from others connected with similar institutions and the Provincial Departments of Agriculture. This has been particularly so in Ontario, and our success—whatever measure it has attained—has been larger in the Province of Ontario than anywhere else. Treating success from a purely material standpoint, and estimating it by the manner in which the men are making repayments, the manner in which failures are being handled, and the numbers of failures, the success in Ontario has been most outstanding.

Soldier land settlement is a re-establishment measure, but not entirely so. It is more a re-establishment measure in the Eastern Provinces than it is in the Western Provinces, where you find the other aspect—the experiment in agricultural colonization.

The first Soldiers' Settlement Act was passed in 1917, and the Board commenced operations in 1918. The Act as then passed was very limited in scope and it was designed to establish men on free crown land in Western Canada—Manitoba, Saskatchewan and Alberta. It also covered assistance for returned men who had their own farms in the East or West, and in that aspect was purely a rural credit measure. But the large idea behind all was the settlement of free lands in the West. A very few months of operation showed we had no free lands in the West in any considerable area suitable for settlement. Where land was suitable for settlement it often had poor transportation facilities, no roads or schools. It therefore became apparent to the Board that the measure would have to be extended and widened very greatly if we were to reach any number of returned soldiers, and as a result of that the Government of the country embarked on a very much wider scheme. They first passed that Order-in-Council and War Measures Act in 1919, which provided for a new scheme whereby the Soldiers' Settlement Board could purchase land up to and not exceeding $5,000 of which amount a soldier was expected to pay ten per cent. in cash. In addition the Board was empowered to grant loans not exceeding $1,000 for building or materials, and $2,000 for stock and equipment. The loans for land and building were re-payable over a period of 25 years, and loans for stock and equipment re-payable in six years, the first year being free of interest and no repayment was required. The repayment commenced on the third year, and the soldier was expected to pay off the stock and equipment loan in the six-year period.

We speak of loans to returned soldiers, but in the sense that a loan company or even a rural credit society makes loans, we do not make loans. We buy property and we pay at least 90 per cent., in some cases 100 per cent. of the full value of the property, and we buy stock and implements and we re-sell that stock and implements, and we re-sell the land to returned soldiers on these agreements, all bearing interest at five per cent., with certain interest exemptions, as on stock and

implements for two years. But it is not a loan. There is no security margin under which to operate, the only possible vestige of margin we have is the ten per cent. in the lands; but in 1919 when a very large number of men were being re-established, and we were inclined to be sympathetic, if a man had a good record, and large family responsibilities and wished to get into something right away, we were inclined to say "this is a special case" and because of that make allowance.

In our methods of operation, in order to try to protect this expenditure of public money, we have endeavoured as far as we could to emphasize certain business aspects, and any success which may have been obtained in the operation of this measure has been due to the adoption of strict business methods.

The first contribution to the returned soldier is the giving of the opportunity to become established as a farmer, giving him the opportunity to secure large capital advances where otherwise he would have been unable to obtain them. That is not a business arrangement. No business concern, or rural credit society even, would ever think of lending a man $7,500, who had only $500 capital. That is an unbusinesslike, an unsound arrangement, but it is a contribution to the re-establishment plea.

Another contribution is the supplying of money at less than cost. These advances to returned soldiers produce or bear interest at five per cent., when the money actually costs the public five and one-half to six per cent. The supplying of money without interest charges at all for two years, in the case of stock and equipment, is a distinct contribution to the re-establishment need of the returned soldier who came within the operation of this measure, and the third contribution is the bearing of all administrative overhead, including all legal charges, all inspection charges, and all other supervision and direction costs involved. In an ordinary loan company in such cases all costs are charged against the applicant, who was exempt from this under this measure. Those are the contributions to re-establishment. Incidentally, there have been a number of others, for instance, we have been able to make advantageous agreements with implement companies. In 1919 an arrangement was entered into where implement companies supplied soldier settlers with implements at wholesale prices, plus a small carrying charge, and as a result of that arrangement some half million dollars has been saved to returned soldiers in purchasing their implements. In the same way, a very large saving has been made to returned soldiers in the selection and purchase of their land. Our method of operation, so far as land classification is concerned, is that the soldier goes out and selects his own land. We try to make him, in so far as we can, responsible for his own land selection. We do not put any man on a parcel of land; he goes out and finds the land he wants to buy. We go out and see if it it worth the money he wants to pay for it. That system has been followed pretty largely, and as a result the returned soldier has gone out and driven the hardest bargain he could, and our officers have come along subsequently and said the price is too high, with the result that over four million dollars has been cut off these lands, that is, taken in the aggregate.

I do not mean to say that all our land purchases have been absolutely on a sound basis. Most of the offices were opened in February or March, 1919, and were immediately flooded with a horde of applicants all wanting to be re-established at once. They had just been thrown out of the army and wanted to get to work at something right away. Our staff were all new, untried, inexperienced, largely returned men themselves. At the present day, 97.7 per cent. of the male staff are returned soldiers, of whom 30 per cent. are, or were pension cases. It was inevitable under these conditions that mistakes should occur.

A great difficulty which we met with was to appraise the moral risk. Not having any margin of security, any business security, except the things we were buying at pre-war prices, the moral risk was very great, and it was impossible to ascertain just what the moral security was. The men who were most excellent soldiers, had the current of their life interrupted with three or four years of war service, and before establishing him on the land we tried to find out what kind of fellow he was before he went overseas, but whether he was the same man after he came back no one could tell you. This could only be ascertained by trying him out on the land. A great many men made mistakes themselves. Men came who had been born on a farm, then drifted into the cities, and enlisted from the cities, and returning after three or four years of service overseas had no city vocation to turn to, looked back in a mist of memory to the farm and it looked a lot brighter than the reality. They did not find out themselves until they got back, that they did not like milking the cows and doing the rough, hard labour necessary, and in six months' time they would throw up their hands and quit. So that it was very difficult to ascertain just what the moral standing of the man was under the circumstances. In this work we received from agriculturists in the older provinces, particularly in Ontario, great assistance in qualifying men, because we had the advice of men of experience in practical and scientific agriculture, and it kept us from making a greater number of mistakes than we otherwise might have made.

In our handling of land, we tried to approach it in a business way, and called to our assistance the best loan men that we could find. The district managers of loan companies and banks all over the country wherever our offices were situated served on the land committees and helped us to train our own staff and kept us from making bad purchases.

We learned that we had to appraise stock and equipment. We could not always take our applicant's word, as we found we were getting loaded up with all kinds of poor stock, and found we had to employ stock and equipment inspectors. That work was done largely by agricultural college graduates, men with scientific training and practical experience as well. The selection and appraisal of stock and equipment is a tremendous task, when you remember that the Board holds title to some 42,000 horses, some 70,000 cattle and thousands of pigs, sheep, poultry, and thousands of farm implements of all kinds, that these things represent an investment of $25,000,000 of public money. You will thus recognize how important is this phase of the work.

Now, the test of Soldiers' Settlement from a material point of view—which may not be the right point of view—in so far as we can appraise it, must be looked for in two things. They are the two things which any business man or agriculturist will ask first: What are your failures, and how are the men paying their indebtedness? Anyone who thought about it at all realized that we must have failures, and we have had quite a number. These failures aggregate about ten per cent. of the men established by loan, and the balance of the 27,000 have been placed on the free lands in the West. Included in that percentage are the men who died, or who had a recurrence of war disability and had to give up, and who really should not be termed failures. There were also quite a number of men who have sold out at a profit, and they are included in that ten per cent., because the only way we could deal with them was to put it in as an adjustment. We did not want to make it easy for a man to turn over his land and get out, because the settlement aspect of the work would be lost, so while not made impossible, the door was not flung

wide open, and there are a large number of these supposed failures, whereas the man really got out with a profit. The failure cases are scattered from the Atlantic to the Pacific.

In the same way that no one would expect us to get out without some failures, so no one would expect that we would have handled, or will handle, all our adjustment cases without some loss of public money. You cannot lend $86,000,000 without a security margin, without taking big risks and without losing some money. It is inevitable, but our figures on the cases that we have completely closed up are most significant. In August we had closed out some 425 cases completely, and at that time we showed a loss of about $19 per case. Since then, on September 30th, our figures showed some 500 cases closed out, with an investment of $2,134,000, and our receipts from everything that was saleable was $2,141,000, so that our showing at that time was some $6,000 to the good. The last figures on November 30th for that period show that we have cleaned up absolutely, lock, stock and barrel, some 616 cases of our failures, and the interim on an investment of $2,500,000 is about $8,000.

Take from the point of view of the collections, and it is necessary here to speak more or less with bated breath—because we appreciate as an organization how difficult and how severe the present period is on a work such as ours. Our settlers individually are suffering acutely from the present crash in the prices of agricultural products, and we must suffer to quite an extent as an organization. We appreciate that the next few years are going to be difficult indeed for the soldier settlers on the land. The horses they bought in 1919 are not worth half as much to-day as they paid for them, and it is the same with the cows and the other stock. Another factor to be remembered is that our collection work has only started. Last year was our first year when any large number of returned soldiers had payments due. Over the whole of Canada there were some 12,000 soldier settlers with payments due in 1921, some small, some large. Of that 12,000, 10,000 paid either in whole or in part, and over 6,000 paid in full; the rest paid substantially in part. We had $2,000,000 due last year, and collected about one million, four hundred thousand dollars. Many who had no payments due made payments, and men with small payments paid in excess; so that our total collections last year amounted to $2,100,000. In the Province of Ontario 93 per cent. of the payments were paid promptly on the due date.

What is the national gain in return for the outlay and expense? The first thing, of course, is the re-establishment, because of these 27,000 men between 23,000 or 24,000 have been successfully and permanently established. A very great work has been done, it has at least relieved by that much the unemployment problem that exists in the cities. We tell our men that even though their situation may be difficult and at times hard, that being supplied with cows and poultry, they can at least make a comfortable living, which is more than a great many of their comrades-in-arms located in our cities are doing.

There are other national gains which are very great, but which are more apparent in the West than here. For instance, in the last two years Soldiers' Settlement has brought under cultivation over 600,000 acres of land. That is equal practically to the whole cultivatable area of the Province of Prince Edward Island, so that so far as agriculture is concerned it may be said that a new Province the size of Prince Edward Island has been brought into existence. This area is not all producing yet, but will produce a first crop next year.

Soldiers' Settlement contributed last year over $3,000,000 to the railway freight receipts, and only half are producing at that. This year they will probably contribute $5,000,000 and eventually will contribute much more.

In the West a very great work is being done along a line that would appeal to a gathering such as this. In the Saskatoon district, where one of your own graduates is located, they are really setting a pace in establishing mixed farming. In a great many districts that have hitherto been wheat farming sections, they are doing development or constructional work. By the impetus given through the work of our District Agriculturists our settlers are getting away from staking everything upon a wheat crop and emphasis is laid upon the all-round system of farming. This is having effect beyond our soldiers' settlement.

It is possibly harder to find gain from this work in Eastern Canada than in the West, for the reason that in a great many cases good farmers were replaced by doubtful ones. But in a great many cases, particularly in the Maritime Provinces which I know best, we have counteracted this and there is a tendency for the large farm to grow up—the consolidation of several farms in one. There is also the gain of implanting the best of our young blood in our rural communities from the Atlantic to the Pacific. In our eastern communities at least the implanting of that new blood is going to have a tonic effect, if we believe that the Canadian Expeditionary Force was comprised of the stamp of men we think it was.

WHAT THE ONTARIO DEPARTMENT OF AGRICULTURE IS TRYING TO DO FOR THE FARMERS OF ONTARIO.

W. B. Roadhouse, Deputy Minister of Agriculture, Toronto.

I am very grateful, and wish to hereby acknowledge my gratitude to the President or to the committee which phrased this subject put down by my name to-day. You will notice it reads "What the Department of Agriculture is *Trying* to do." That took a load off my shoulders at once, because I realized I might be able to say something on that subject without doing any particular violence to my own modesty, or to that of other members of the staff. Realizing, however, the form in which the subject was presented for discussion, I did feel that half an hour was scarcely enough time to attempt to do justice to the subject of what the Department is trying to do. I see men in this room, for instance, officers of the Department of Agriculture, and it would be folly indeed to attempt to do full justice even to their work in the short space of one-half hour. I can, however, utilize the time in endeavouring to give you a general idea of the organization and work of the Department of Agriculture in this Province.

The Department of Agriculture was organized in 1888, and it is therefore now just about 34 years of age. Before that time a certain amount of agricultural work had been carried on in this Province. The Ontario Agricultural College, for instance, had been going on for some fourteen years. There had been agricultural exhibitions, and in these and a number of other ways efforts were being made along organization lines to develop the agricultural resources of this young country. In 1888, however, the organization from the Government standpoint was changed, and was placed in the sole charge of one Minister, instead of only a partial and incidental interest of a Commissioner as before. At that time, Hon. Charles Drury was chosen as the first Minister of Agriculture in this Province,

and while he was laying the foundations of the Department which has since developed, he was doing what proved to be perhaps an even more important work at home, in laying the foundations and training the future Prime Minister of this Province. In the thirty-four years which have elapsed since the Department was established, there have been seven Ministers.

It is unnecessary for me—and time will not permit—to attempt to trace all the steps in the organization of the Department. It has been developed and divided into various branches so that to-day we have a branch dealing with almost every phase of Agriculture, and have an appropriation which aggregates over $1,500,000 to support the work being carried on. But while there have been these developments, there has always been the same underlying principle which was adopted in the organization of the Department, viz., the principle of ministerial responsibility—ministerial responsibility for recommendations of appropriations, ministerial responsibility for the supervision of appropriations and for the direction and guidance of the work. That has been the underlying principle of our organization in this Province, and a proper understanding of the working of that principle will account for differences which have been noted and are undoubtedly existent between the organization as we have it in this Province and as we see it in some other sections, particularly in States across the line.

So much, then, for organization. I now come to deal more particularly with the work the Department is trying to do. In dealing with this phase of the subject, I have decided for purpose of brevity, and in the hope, perhaps, also of clarity, to present the work under the three headings: Education, Marketing, and Finance.

The outstanding function of the Department of Agriculture, then, need I say, is education. As to the importance or necessity of this, it is unnecessary for me to argue. A striking illustration, however, of the need came to my notice only a few days ago, when I noted in the London *Times* a letter written by a prominent agriculturist from Holland who had recently visited Great Britain, and had been investigating agricultural advantages there. In leaving, he summed up his impressions and these are very illuminating in many ways. But the point to which I would ask your attention now is contained in his concluding sentence: "In the education of the British farmer lies the future prosperity of British agriculture." If that is true of an old country such as Great Britain, with its splendid record of fertility and its splendid achievements in live stock, surely there is no need for any explanation as to the importance of education in a newer Province and a newer country such as that in which we are engaged, and so I place education first, as the main function of the Department of Agriculture. I attempt no academic definition as to the meaning of education, but would say that as interpreted by the Department it means the dissemination of information on all phases of agriculture to all kinds and classes and conditions of people engaged in the industry, and in every way and method which promises to be effective in accomplishing the results which we desire to achieve. It brings the knowledge of the past, the unchanging and established principles and practices of succeeding generations, and with these it links the newer discoveries of science, for science is ever an open book ready to challenge study and to reward its searcher. It recognizes the education of which I speak, recognizes the fact that agriculture is an individual industry, and it is, therefore, not subject to the conditions, for instance, which obtain in industrial occupations where hundreds or thousands of men work from day to day under the immediate supervision of an overseer or a superintend-

ent. So we endeavour to recognize these facts in planning the education which is carried on by the Department in relation to agriculture.

We have various ways of giving effect, and each of these is a story in itself, so that I can only briefly enumerate them and try to show that in the aggregate they constitute a chain of educational facilities which are based upon the needs and calculated to accomplish the purpose which we have in mind. I need scarcely say that necessarily we would place first this institution, The Ontario Agricultural College. It gives a broad, substantial, all-round education, but it also gives that technical training useful in successful agriculture. It trains, moreover, the teachers and those who would go out to spread this information, and it carries on work which goes back to the people, and influences the farming operations in four or five or half a dozen main channels. So that this is the centre, this is the foundation of agricultural education in this Province, and, in fact, has been the centre and foundation of agricultural education in the entire Dominion of Canada. In itself, however, it cannot be expected to reach the whole people, and so in 1907 there was devised a new method of trying to get out to the people the things which this institution was finding out and proving to be effective in making for greater prosperity. It was decided then to adopt the plan of taking a graduate of this institution and locating him permanently in the county so that he might study local conditions and his services and advice might be available at all times to the people of that district. Ontario, may I say, was the first Province on this continent to adopt that plan, and I am very glad to say that it has worked so satisfactorily that one county after another has demanded the service, until to-day every county in the Province of Ontario is served by a local agricultural representative, touching the life of the people in a hundred different points and rendering innumerable services in various avenues of agricultural activity. Of these I might only mention a few, because out of this system there has grown up a number of other movements, which almost amount to systems in themselves.

I would mention first the early realization of the need of reaching the boys and girls. There had been a certain amount of work done among adult farmers, but it was soon realized this was not in itself sufficient and that some plan must be devised for reaching boys and girls and interesting them in this work, and so the School Fair was adopted. This, too, has grown as a result of the demands of the people and in compliance with requests made upon the Department from time to time. Practically every county in the Province now has its School Fairs and the scope of the work is indicated by the fact that last year 93,715 boys and girls came within the influence of the School Fair work.

Then this year we have been trying out another plan. That is, the three months' course. The Minister felt that there were a large number of young people in this Province who had got no farther than the public school, or perhaps a year or two at the high school, who would be glad of some opportunity of improving themselves along educational lines, and hence the three months' course was devised, a course which stresses agriculture and domestic science, but, at the same time, devotes considerable attention to cultural subjects and the general problems of better citizenship and better home-makers. It is being tried out this year for the first time in four different counties, and the attendance is well up to fifty pupils, each, while at some of the special sessions there is a very much larger attendance. This, in itself, is an indication that it is filling a real need.

Then there is the month course. They have been holding classes a number of years now for one month in January and February. At the present time, there are perhaps twenty-five of these in progress. Since being established, seven or eight thousand boys have come within the influence of these courses. Think what that means. Seven or eight thousand boys who have had their knowledge, of what they intend in the great majority of cases to make their life work, broadened; or, which is more important, have received a broader outlook, have enlarged their social horizon, and, altogether, have the broader viewpoint which perhaps, after all does as much as anything else to make for success in whatever avocation they may take up.

Then in eastern Ontario we have established the Kemptville School, which gives a two year course for boys, one term for girls and short-courses. In the regular courses there is now an attendance of about sixty, so I am pleased to say it is being well established and rendering a real service to that community.

Then we work through numerous organizations—Women's Institutes, Horticultural Societies, Fairs and Exhibitions, and various organizations of that nature, as also do we endeavor through these organizations to convey the inspirational and educational influence of competitions, by giving generous encouragement to the prize list of shows and competitions, and on top of all these things would only mention the circulation of literature, of which large quantities on practical subjects are distributed from time to time. This, then, is a summary of all those things which we regard as distinctly educational in character, and which show our confidence in the value of education as a factor in agricultural improvement, and a realization of our responsibility to give opportunities as numerous and as practical as possible, as convenient as possible, to the largest possible number of people in this Province. So much, then, for that phase.

There is another phase, however, which comes more under the head of marketing to which I would like to devote a few moments. There is no doubt that one of the most acute problems at present is the problem of marketing, and in meeting this problem I would just illustrate (for time permits no more) the work under three heads. There is first of all the local market, and on this there is necessary a study of local needs and the application of the practices of the farm to those local needs. Upon this subject the Survey Department of this institution has thrown a large and illuminating light during the past few years. In its researches and information on distribution of crops, the distribution of labor, the distribution of man power and horse power, they have given a large volume of information which is of vital importance to a proper study of the problem of local marketing; but there is also the question of marketing from the national standpoint, and what the Department is able to do on this matter—which comes more particularly in the Federal jurisdiction in our organization —may best be illustrated by one particular point, and that is the present acute and critical situation in the bacon industry in this Province. I heard an address the other day in regard to this industry, and it was illustrated by a chart which shows the lines rising and falling as different nations—Denmark, Sweden, United States, Canada—competed against each other in the British market for the bacon trade of Great Britain, and it struck me that a full realization of those charts would bring to us a realization of the importance of nationality in our export marketing. As we produce of the quality and quantity that is needed we are producing in the name of Canada, and Canada is in competition in the

world's markets against these other great competing countries. And so I say this export problem is a problem of nationality, as well as one of individual effort and individual information; but, as far as our Department is concerned, our function is mainly in conveying to those who are competing for this market the information as to the situation.

Most of you have heard that a new effort is to be made to develop the type of bacon hog in this country which will meet the needs overseas. There is to be adopted a grading system, and the information as to the grading system, as to the needs of the market, as to how these needs can best be met, will be brought to the attention of probably one hundred audiences in this Province during the next three or four weeks by the Ontario Department of Agriculture. That will reach thousands of men on the land and will be a quick and effective means, we hope, of bringing the information in the form which will be most helpful, and if the future justifies the position which is being taken now, and if the marketing in the future months vindicates the information which we are now disseminating, I feel confident that the bacon industry of this Province and Dominion will enter upon a new era. So there are those two points in the marketing matter.

There is just one other point to which I will refer and that is co-operative organization. When it comes to the actual business of marketing, this must necessarily be done by those whose business it is. It is neither wise nor expedient that the Government or its officers should attempt the actual handling of the business, but the Government through its officers can assist in bringing together co-operative organizations on a proper basis and lead them through all legal intricacies, etc., of the matter to a success. Illustrating, may I mention our experience in connection with the Niagara Fruit Growers' Association. The original meetings in connection with that organization were called by the Department; in other words, the Department brought the men interested together, the Department offered a channel of communication and conference, and out of that conference has developed the organization which has had a very successful first year, and promises to be a great factor in the future development of the fruit industry of this Province. So I might illustrate in others, but wool and fruit have taken the lead in this Province in the organization of commodity marketing, which is one of the big problems presented on this continent, and I believe it is only a short time before other commodities will follow the examples of wool and of fruit, and the Department will be very glad to facilitate such an achievement.

There is just one other broad subject then left for this brief discussion, and that is the subject of finance. At last session of the Legislature, certain measures were passed dealing with this subject of finance, and providing additional facilities for the farmers of this Province. This has been termed the new farmer's friend, and I hope it may so prove to be. Briefly, there are two forms of finance, there is the short-term and the long-term. The short-term is handled entirely through local organizations. Provision is made for the formation of a local association which supervises the loans in its district, and I am glad to say that the first formed loan association in this Province has just recently completed its organization in the County of Halton, and is in a position now to take advantage of this Legislation. There are others at present in process of formation, but it is not to be expected, nor hoped, that there will be

any mushroom growth of these associations. Security, stability are both more important than speed in matters of this kind, and it is our aim that such growth after it does take place shall be upon proper foundation to assure future success. It is desirable that these considerations be kept in mind above all others, and whether the growth be rapid or slow there is to be kept in mind that there is available an alternative system to the farmers of this Province which effectively safeguards them against any autocratic or extortionate methods which may be in effect or may be attempted.

Then there is the long-term loan. This is made direct by the Agricultural Development Board at Toronto. They are made to the extent of sixty-five per cent. on first mortgage security, and are available for the purchase of land and the erection of buildings. Up to the present time the Board has passed loans to the extent of something over $100,000, so that a substantial start has been made in giving effect to this legislation. I am very glad to say that many of the applications for loans which have been received and acted upon have been from young men who are buying the homestead and planning for themselves a future on the old farm, which is made more possible and more secure by reason of the fact that they are able to arrange their financial conditions for the next twenty years. These loans, as you know, are re-payable over a period of twenty years, with interest at six per cent., and that fact in itself gives a definiteness and security which makes for permanency and stability, and so I am glad to be able to give you this brief report of the preliminary work of the financial legislation which was adopted at the last session, and which I have every confidence will play a large part in the agriculture of this Province in the future.

I have endeavored to group this brief and general story of the work of the Department around those three points—Education, Marketing, and Finance—because I believe they are vital words in the agricultural situation to-day. On these three words—Education, Marketing, Finance—hang the solution of many of the agricultural problems pressing upon us at the present time. On these three words the Department has a mission and has a message, a mission which we will endeavor to fulfil with vigor, a message which we will endeavor to proclaim with vision. That something has already been done we hope and believe; that there is still much to do we fully realize. We therefore ask for criticism, for help, for co-operation, for suggestions. We feel that we must in the carrying on of this work have this criticism and co-operation if the best results are to be obtained, but, above all, there must ever be before us two pictures. One, a picture of the natural resources of this Province, of the soil, of the climate, the trees and the water, and those things with which nature has so generously endowed us, and the other is a picture of the man on the highway or byway who is endeavoring to make a living, and better, for himself and the others of his family to the full stature of Canadian citizenship by struggling, perhaps under hardship, perhaps under difficulties, with the resources with which this Province is so generously endowed. To be useful to that man is the ambition of the Department. If we succeed in being useful to that man multiplied many times over in this Province, we will be of service to the State, and to contribute to individual prosperity and national development is our highest possible ambition. If we are true to our tradition, to the tradition of thirty-four years which have gone, if we are true to our trust and our opportunity, we can do no less, nor can we covet any other renown.

THE WORK OF THE CANADIAN SOCIETY OF TECHNICAL AGRICULTURISTS.

PROF. J. E. HOWITT, PRESIDENT, WESTERN ONTARIO BRANCH.

I think I can say to you that the work of the Society of Technical Agriculturists is extremely important to every man engaged in technical agriculture, and everyone interested in scientific agriculture. I think I can best place the work and objects of this Society before you by reading very briefly from the Constitution of the Society

"The objects of the Society shall be the following:—

"(*a*) To organize and unite all workers in scientific and technical agriculture, so that they may combine effort to promote the scientific and practical efficiency of the profession and to make the profession of increasing service to the agricultural industry.

"(*b*) To maintain high standards in the profession

"(*c*) To encourage a national policy of agricultural research.

"(*d*) To help to procure for scientific work in agriculture greater financial support and wider fields of usefulness.

"(*e*) To aid in securing and maintaining a closer co-operation among all workers engaged in the profession of agriculture in Canada, and the better co-ordination of their work.

"(*f*) To aid in bringing about a closer co-ordination between the profession as an organized body and the various agricultural associations throughout Canada.

"(*g*) To serve as a medium where progressive ideas for improvements in agricultural education, investigation, publicity, and extension work can be discussed, formulated and recommended for adoption when deemed advisable.

(*h*) To aid in ensuring the employment of technical men for technical positions.

"(*i*) To issue publications in the interests of Agricultural Science."

You will I think agree with me, after looking over the objects and purposes of this Society, that no man who has the interest of technical agriculture at heart can afford to keep aloof from a Society of this kind. The main object is to place the profession of technical agriculture on a par with the other professions, such as medicine, engineering, law, etc.

THE WORK OF THE O. A. C. ALUMNI ASSOCIATION.

MR. W. H. PORTER, London, spoke for Western Ontario Alumni Association, and referred to the fact that its membership was comprised of both practical and professional men.

MR. I. B. MARTIN, Toronto, represented the Central Ontario Alumni Association, and pointed out the advantage of such organizations, which enabled ex-students to fraternize in groups at various centres.

MR. C. F. BAILEY, President of the Provincial O. A. C. Alumni Association: While as yet in its first year of existence—a mere infant—the Association gives promise of future growth and vigour.

Since the organization of the Provincial Association, we have been able to do only one piece of work that might be worthy of mention at this time, and that was the holding of a Field Day at the College in June of last year. At that time we had about six hundred people present. We had a programme that was

more or less flexible, and a special effort was made to try and make all those who came feel at home, give them an opportunity to meet their old friends, visit the Departments at the College and find out what was being done. First of all, we had a meeting in the old gymnasium where we had the pleasure of addresses from President Reynolds and from the Minister of Agriculture. This was followed by a luncheon provided by the College. A part of the afternoon was devoted to sports on the campus. I feel confident in saying that everyone present felt it was a day well spent.

Our next Annual Meeting is to be held in London on March 10th of this year, at which we propose to have a two days' session. The first day will be devoted to routine business, election of officers, etc., and special addresses by leading authorities on agriculture, farm loans, etc. On the morning following our Annual Meeting, we propose to devote the time to a discussion of agricultural education and extension work, as these are subjects which have received special study by our local O. A. C. Alumni Associations.

THE O. A. C. STUDENTS' COUNCIL

R. G. Rogers, President, Students' Council:—I consider it an honour, Sir, to have the privilege of addressing this meeting as the representative of this present student body. We comprise about 450 students, representing South America, United States, British West Indies, British Isles, New Zealand, Finland, and every Province in the Dominion. I think I am safe in saying that the efficiency of a student body can be determined to a great extent by the interest they take in College societies, which ultimately fits them for greater and better citizenship. The calling of the country to-day is for leaders.

In order that the students may be trained along all lines of executive work, we are organized in five major societies:—The Co-operative Society, the Athletic Society, the Literary Society, the Philharmonic Society, and the Y. M. C. A.

The biggest item for the consideration of this present student body is the erection of a fitting Memorial Hall to our 110 fallen students. We, as students, feel that as long as this is a College, the memory of these gallant boys should be perpetuated. The students have made sacrifices to raise the money for the erection of this building. We sent out our "Sod Busters" who played to audiences numbering nearly ten thousand people, and we have excavated the foundation for the building. We have received enough suggestions to build a Tower of Babel, but we do need money. Has not Ontario and Ontario agriculture, which has received so many benefits from this College, an obligation to fulfil in helping to raise this fund. The students have given or are giving in the very near future about fifteen dollars per man in addition to the work which they have done. Is it true that the ex-students and other men interested in this College, who are blessed with all the benefits of the present day and who have not suffered and lost money and time by active service overseas, is it true that they are withholding subscriptions to this fund? Is it true that the ex-students of this College are not going to support one of the most sacred traditions of this College? The boys over there are not asking for it; it is we, who have benefited by their sacrifices.

President Reynolds said last night, "All ye who are heavy laden with hundred dollar cheques come to my office and we will take them in," but if you feel you would not like to meet the President with any less than $100, just stop any of the boys and they will be only too glad to receive your subscriptions.

THE WORK OF THE ORGANIZATIONS OF SCIENTIFIC MEN IN THE ADVANCEMENT OF AGRICULTURE.

President J. B. Reynolds, O. A. C., Guelph.

When I try to think of the organizations of scientific men who have done things for the advancement of agriculture, I know not where to begin or where to end. Both the number of men, and the character of the work done are involved in the title. Where two or three are gathered together in unity of purpose, there is organization. And no one can tell, with respect to the work of scientific men, how far-reaching the results may be. One thing is certain, modern science has been of incalculable economic value. There is recognized, however, a distinction between pure science and applied science. During the recent meeting of the American Association for the Advancement of Science, I met one of the principal directors of the Carnegie Institute. In describing the work of that Institute, he said that its main purpose was to encourage "fundamental research." When pressed for a definition of "fundamental research," he further stated that he desired to encourage research in pure science, without immediate regard to economic application. "Here," he continued, "in the Carnegie Institution, we have almost unlimited funds, for the spending of which we are not called to a reckoning by any government, or by any industrial or commercial interest. We do not require to give account of our stewardship in results that may have an immediate money value. We are under obligation only to advance science and to increase the total knowledge regarding natural law and natural phenomena. We think, therefore, we have an unique opportunity to encourage pure research, and have decided to leave to the "engineers" the economic application of any discoveries we may make. And by the term "engineers" we mean those scientists who are interested especially in some natural resource or some industry, such as milling, or mining, or forestry, or agriculture."

The Carnegie Institute is an organization of scientific men whose relation to agriculture is very remote. But their work is fundamental and indispensable to the advancement of science generally; for the economic scientist, who is studying for the present some pest of orchard or field, or some problem of breeding or feeding farm stock, must have that fundamental background, and some of that fundamental training.

Then there are the universities, with their branches of scientific teaching and research. Someone has defined a university as an institution where nothing useful is taught. Again there arises the question of the need of fundamental and universal science, and the universities of the present day are not unmindful of economic and industrial and human needs. They have established faculties of medicine and engineering, of mining and agriculture.

Next in the approach to economic problems come the agricultural colleges, the experiment stations, the bureaus for agricultural research and extension teaching, such as the provincial and federal departments of agriculture; the

alumni associations, so far as their objects are technical and not merely social, the C. S. T. A., and last but not least that organization of scientific men and practical farmers known as the Ontario Experimental Union.

The advancement of agriculture is the net result of a partnership, to which three parties, the scientist, the farmer, and the public, contribute different but indispensable shares. The scientist makes the discoveries of new and improved varieties, methods of management, and methods of control. But these discoveries, however true they may appear in the laboratory, do not contribute to the advancement of agriculture until they have been put to practical proof by the farmer. The farmer's attitude towards the discoveries and the recommendations of science is therefore of first importance. If we consider the relative positions of agricultural science and agricultural practice at the present time, we must conclude that science is ahead of practice. A farmer was invited to attend a meeting at which a professor of improved agriculture was to hold forth. "Nothing doing," he rejoined. "I know a whole lot more now than I can get done." Practice, in agriculture as well as in conduct, is more difficult than theory. "If to do were as easy as to know what were good to be done, chapels had been churches, and poor men's cottages princes' palaces." Therefore the quality and the extent of the farmer's co-operation with the scientist is the final measure of advance in agriculture.

The public share in the partnership is the share usually allotted to the public—to pay; to pay for the upkeep of the scientist's laboratory, for his apparatus and equipment, and incidentally, to pay the scientist's salary, and if someone should say that it is unfair to the public and unduly favorable to the farmer, that the public should pay for services from which the farmer is the chief beneficiary, but only indirectly a beneficiary at all, the public chiefly benefits from the expenditure of public money in the advancement of agriculture. Whatever needs to be done for the advancement of agriculture, which the farmer cannot do himself, from scientific investigations to Acts for the control of noxious weeds, is in the public interest and fairly chargeable to the public funds.

The business of organizations of scientific men is (1) to investigate the phenomena and the laws,—natural, economic, and social,—that operate in advancing and retarding agriculture and country life; (2) to make known these laws and occurrences in such a way that those living and working in the country can make use of the knowledge for better farming and better living; (3) and by using their knowledge of rural science, and of its importance in the public welfare, to secure public support for further investigation and teaching in scientific agriculture.

Agriculture, whether science or practice, operates in the realm of natural law, and in this realm there are certain principles to be borne in mind. In all improved agricultural products, human selection has taken the place of natural selection. The pietistic view that whatever is, is right, that nature cannot be improved upon, that nature is not to be interfered with, that grasshoppers and weeds and corn-borers are visitations of Providence which must be endured for our sins, can hold no place in an advancing agriculture. Human experience has found certain natural products useless or harmful, and these we seek to destroy. All this is human selection. To what extent human selection is at variance with natural selection, may be seen if we imagine our improved domesticated species left without cultivation or care, and allowed to take their chances for life in a state of nature: and if at the same time the farmer and the

scientist ceased their fight against useless or harmful species. Human ingenuity has developed natural species into machines for the satisfying of human needs; the hen has become a machine for laying eggs far beyond the natural requirement for reproduction, the dairy cow has become a machine for producing milk far beyond the natural requirement for nourishing her offspring; the bee has become a machine for manufacturing honey, and we do not even allow it to use its own stores in the winter time, but feed it with an artificial substitute. We have increased the size and intensified the sweetness of fruits, we have plumped the berry of the wheat and the oat. We have turned select species to innumerable uses, some for food, some for burden, some for strength, some for speed, or some for beauty. All these services we have managed to exact from our favorite species, in return for our skill in improving them and our care in guarding them. But let us relax our vigilance, our skill and care, and our pet products would either cease from off the earth, or revert to the wild types. What chance would the meaty Shorthorn bull stand against the sinewy moose of the northern woods, or the prize Berkshire against the wild boar, either in a stand-up fight, or in the daily struggle for existence? What chance would our grains, our grasses, our fruits and vegetables, stand against competing wild species, or against the hosts of insect, fungus and bacterial enemies? The words of the prophet would come true once more: "That which the palmer-worm hath left hath the locust eaten; and that which the locust hath left hath the canker-worm eaten; and that which the canker-worm hath left hath the caterpillar eaten."

Thus the business of scientific men is not only to improve domesticated species; it is also to surround them with conditions favorable to retaining their superior qualities—that is, to study housing and feeding of live stock, and soil management and soil fertility: it is to save these improved species from competition and the struggle for existence against wild species; and it is to save them from attack by disease, and the degeneracy to which all improved species are liable.

Scientific men from their studies and from their constant point of view naturally are most impressed with the need for this continual exercise of skill and care. And therefore their further business is, besides experiment and research, to impress upon practical farmers and the public the importance of these matters, along with a knowledge of methods. For the worst enemy of agricultural progress is the indifferent farmer; and the next worst enemy is an indifferent public. And above all the urgent business of scientific men is to impress the farmer and the public with the seriousness of the menace from the minute forms of life that attack agricultural products at every stage of their growth. At the Toronto meeting of the American Association, Dr. Howard, the noted entomologist uttered a solemn warning. Speaking of the conquest and control of the insect world Dr. Howard said:—

"Few people realize the critical situation. There is still a war, not among human beings, but between all humanity and certain forms that are arrayed against it. Man is the dominant type on this terrestrial body; he has overcome most opposing animate forces; he has subdued or turned to his own use nearly all kinds of living creatures. There still remain, however, the bacteria and the protozoa that carry disease, and the enormous forces of injurious insects which attack him from every point and which constitute to-day his greatest rivals in the control of nature.

"They threaten his life daily; they shorten his food supplies, both in his crops while they are growing and in supplies after they are harvested and stored; in his meat animals, in his comfort, in his clothing, in his habitations, and in countless other ways. In many ways they are better fitted for existence on this earth than he is. It will be necessary for the human species to bring this great group of insects under con-

trol, and to do this will demand the services of skilled biologists—thousands of them. Let all the departments of biology in all our universities and colleges consider this plain statement of the situation, and let them begin a concerted movement to train the men who are needed in this defensive and offensive campaign."

It has been generally supposed, until quite recently, that the main if not the only concern of agricultural science was with production. Rather curiously, while the scientific men led in attempting to apply science to agriculture, and while in this attempt they were too often met by indifference and scepticism, and ridicule, and antagonism from the farmers. On the other hand, in Canada at least, the farmers were the first to see the need of applying economic science to farming, while the schools and the colleges have been comparatively slow to take up this new branch of agricultural science. When I went to Manitoba in 1915, I found that any gathering of Graingrowers, if they would listen at all, listened with ill-concealed impatience to a speaker who attempted to expound the principles of increasing production. The word "economic" was the magic word which would admit one to their favor. Anyone who has had a chance to learn something of the struggles of the Graingrowers' organizations with the organizations they call the Big Interests—the railroads, the elevator companies, the banks, the manufacturers, and the grain exchanges—will understand why the farmers have emphasized the word "economic." "Increase production," they shouted. "The more we produce the less we get." And to console the farmers for this peculiar reversal of effects, the economists talked about the law of supply and demand. But the farmers knew quite well that it was not according to any law of supply and demand that they were offered 59 cents a bushel for wheat at Portage la Prairie, when the price of wheat at the terminal was 19 cents higher, and the freight charges were 9 cents. They knew, or they thought they knew, that there were too many middlemen interfering with that law to give it a fair chance to work. Hence arose the Farmers' Organizations in Western Canada about twenty years ago, and many years later it spread to the east. But it has been essentially a farmers' organization, born of economic necessity, of resentment, and even of despair. The agricultural scientists have been slow to take hold, but now they are beginning far and wide, in Canada and in the United States, to see that just as there are natural laws and natural phenomena to be understood and brought under the farmer's control for the uses of production, so there are economic phenomena and economic laws to be understood and if possible brought under the farmer's control for the purposes of distributing and marketing his products for his own profits. So, the economic scientists have in this instance followed the farmer's lead, and are studying costs of production, and devising plans for farm accounting, and are trying to find improved methods of marketing. They have found that before they can get very far in these studies, they must study the farmer himself, and learn something of his psychology. Without very prolonged study of this subject they have found that the farmer hates bookkeeping, and that if he is to be induced to keep books, it must be in a highly simplified and disguised form. They have found that the farmer, greatly to his own hurt, has long remained an individualist, in the midst of a business world that has been given over to mergers, combines, gentlemen's agreements, interlocking directorates, and other devices for the increase of business strength and the destruction of competition. They have found that the work of production alone, interesting as it always is to the real farmer, does not entirely satisfy his mind, does not give him those social contacts that he needs to complete his experi-

ence. They have concluded that he must have business interests on a larger scale than selling an occasional hog or steer or load of wheat. He needs the mental stimulus of larger business undertakings, which in the circumstances cannot be furnished by his private business alone. Thus the agricultural scientist has come to the same conclusion as the farmer but by a different road, namely, that co-operative undertakings will furnish the farmer with the economic protection, the social contacts, and the mental stimulus which he could not enjoy when he gave his undivided attention to production. The next step for the scientist, delayed long, is to make a careful survey of marketing opportunities and co-operative enterprises generally, in the hope of being able to give aid in guiding the movement in safe, profitable, and durable courses.

I may be allowed to take this opportunity to remind you that the Ontario Agricultural College is now equipped with an organization of agricultural economists second to none on the continent. The surveys they have already made, of the cost of production of numerous farm commodities, and of various systems of farming, should be known to you from the reports that have been published, and the bulletins that have been issued. These reports have been used already to secure economic justice to the farmers in the adjustment of prices. And the surveys will be continued in the effort to help the farmer to secure his rightful place in the business world, through collective methods of doing business.

There is still another aspect of the whole question of rural science. It is possible to place undue emphasis on the technical and economic aspects, to the neglect of the social aspect, the human problem. There is a part of the rural problem, and therefore a field for rural science, which lies outside of better crops and collective methods of doing business. The farmer himself and his family are more important than farms or markets. It is one thing to make a living on the farm; it is quite another thing to live in the country. The real rural problem is to make the conditions of country life satisfying to the right sort of people.

To do this, a considerable amount of inquiry, investigation and definition needs to be done. We need to understand, for example, what we mean when we speak of the right sort of people. For I believe that to some who profess to be interested in this question the right sort of people for the farms and the country are those who will work, and save, and endure, and remain under-privileged, and never complain. And so we must define what we mean by this phrase. And then it is necessary to find out, much more exactly than we at present know, what are the prevailing conditions of country life, with respect to roads, and schools, and churches and opportunities for young people, and the conveniences and the inconveniences of country houses. Then we should know more than we know now about the villages and the country towns, how far they are community centres for the rural districts surrounding them; how far there is a community of interest and of action between town and country, in schools, churches, business and recreation. It is essential to create interest in these questions among the country people and the townspeople themselves, for the best kind of aid is self-aid, and the only kind of advancement that is worth while is the advancement which comes from one's own efforts. It is essential also to create interest in these questions in the public mind, for the public welfare requires that conditions of living in the country shall be satisfactory to those who are intelligent enough to farm well, and generous enough to live well, and public-spirited enough to be good citizens.

Ontario Department of Agriculture

SEVENTEENTH ANNUAL REPORT

OF THE

ONTARIO

Vegetable Growers' Association

1921

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO :

Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty

1922

Printed by
THE RYERSON PRESS.

To His Honour, HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I herewith present for consideration of your Honour the Annual Report of the Ontario Vegetable Growers' Association for 1921.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1922.

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Ontario Vegetable Growers' Association

OFFICERS, 1922

President: G. H. Poad, London, Ont.
First Vice-President: W. H. Stewart, Aylmer, E., Que.
Second Vice-President: W. J. Cooke, Cataraqui.
Secretary-Treasurer: J. Lockie Wilson, Toronto.
Auditor: J. E. Rettie, Toronto
Executive: The Officers and Henry Broughton, Sarnia; G. B. Hellerman, Waterford, and A. H. MacLennan, Toronto.
Representative to the Canadian National Exhibition: F. F. Reeves, Humber Bay.
Representative to the Central Canada Exhibition: Wm. Trick, Ottawa.
Representative to the Royal Agricultural Winter Fair: F. F. Reeves, Humber Bay, J. Lockie Wilson, Toronto; A. H. MacLennan, Toronto.

FINANCIAL STATEMENT.

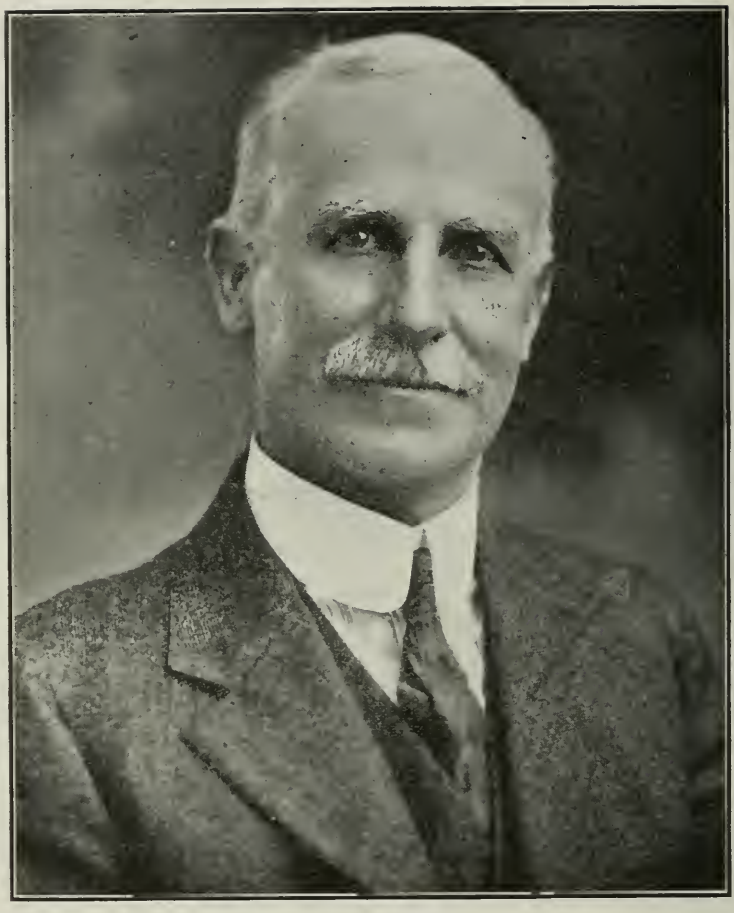
December 1st, 1920, to November 30th, 1921.

Receipts.

Grant	$900 00
Membership Fees	105 00
Interest	15 15
Discount not deducted from cheque	15
Garden Competition Entries	34 00
Field Crop Competition Entry Fees	170 00
	$1,224.30

Expenditure.

Debit balance, November 30th, 1920	$40 57
Auditor	5 00
Convention Expenses	95 20
Postage	15 00
Printing stationery 1920 and 1921	77 54
Expenses, Directors and Executive Meetings	307 49
Membership Competition prizes	48 00
Refunds on entries 1920 and 1921	22 00
Charge on overdraft at Bank	27
Garden Competition Prizes	144 00
Field Crop Competition Prizes	300 00
Vegetables for Central Canada Exhibit, 1920 and 1921	10 00
Balance on hand	159 23
	1,224 30



G. H. POAD, LONDON, President O.V.G.A.

Ontario Vegetable Grower's Association

SEVENTEENTH ANNUAL CONVENTION

The seventeenth Annual Convention of the Ontario Vegetable Growers' Association was held in the Canadian Foresters' Hall, Toronto, on Thursday, February 16th, 1922, with the First-Vice President, G. H. Poad, London, in the chair.

The various Branches in the Province were well represented by delegates and the addresses and discussions which followed, were of much interest and of great educational value to the market gardeners of Ontario, in their work.

PRESIDENT'S ADDRESS

Maurice May, Tecumseh

It is a great pleasure for me to welcome you to the 17th Annual Convention of the Ontario Vegetable Growers' Association.

I trust that the addresses delivered will prove beneficial, and that we all will be the better for having attended this meeting.

The Association seems to have been somewhat at a standstill in the past year, some of the branches not coming up to the standard of membership which should be their aim. Probably in most cases there have been good reasons for this condition, but would it not be well for us to look carefully into this matter and see if some method could not be found which would overcome the difficulty. The strength of the O.V.G.A. lies in the number of its membership and a growing condition is necessary if we would be in a situation to obtain the best results. It is my hope that from now on the Association may become stronger.

There are several matters that I would like to bring to your attention at this time. Since our last Annual meeting the tariff of the United States Government in regard to imported vegetables has been changed. The amount of duty now asked has practically stopped all exportation of vegetables from Ontario to the United States. My own district has possibly felt this more than any other as our natural market is the City of Detroit. It would seem to me it would be well for us to look very seriously into this matter and consider what means could be taken which would tend to relieve us of this trouble. It would seem well to have this matter taken up by the Association as a whole so that we might be able to meet similar situations arising in the future.

We have been troubled a great deal this summer in Western Ontario by the European Corn Borer. This insect feeds on a number of other plants besides corn, especially celery and spinach, and the regulations prohibit exportation except under license, which has cost us a considerable amount of money. The late corn also throughout the whole Province has been infested the past fall with the Corn Ear Worm. We are hoping some remedy will soon be obtained to control both of these pests.

Another matter which it would be well to consider at the present time would be the necessity of greater co-operation between the growers and the Government Investigators. While we have often talked of this matter, very little actual co-operation has been experienced. The greatest difficulty so far has been that the grower has not made any great effort to bring his troubles to the attention of these men, except in a very limited way. Would it not be advisable for every grower to put forth a greater effort to do this and assist in every way so that they may be solved in the most efficient manner.

Possibly, however, the greatest trouble that is affecting the market gardener at the present time is the rapidly decreasing amount of barnyard manure. Most sections of Ontario are now unable to obtain manure, as practically very little can be obtained from Toronto, which in the past has been the largest source of supply. The great problem is how to keep up the fertility of the land and at the same time produce the crops and obtain the revenue from the land. Can we not find some means whereby this matter could be gone into experimentally on a large-sized scale from a commercial standpoint so that we could get definite information as to what crops are best suited for green manures and what combination of ingredients in commercial fertilizers will give the best results. In the past, too, little care has been taken as to what ingredients go to make up a fertilizer and how readily available these are. A fertilizer which is valuable in growing grain crops may be of little use to the market gardener. To give him the biggest results, the availability of the fertilizer is the first thing which should interest him and it would seem well for us to consider carefully this matter, and see if a plan could not be derived that would give us the results required.

It has been announced that a farm has been bought at Ridgetown in Kent County for experimental purposes. Should we not take up with the Department of Agriculture the necessity of doing a great deal of experimental work at this station on the lines I have mentioned above. It is situated in a district best suited to grow garden crops and it would seem well for us to make a request, that a considerable share of the farm should be devoted to commercial experimental work in the growing of vegetable crops.

An interesting discussion followed, the points made relating to local market conditions and the tariff.

REPORT OF THE SECRETARY-TREASURER,

J. Lockie Wilson, Toronto

I am pleased to report that the year just closed has been a prosperous one for our Association. With our enthusiastic membership and Board of Directors who have their heart in the work you are engaged in there is little wonder that progress can be reported from year to year. The crop of early vegetables was a fair one and the price paid to those who had these ready for the early market proved satisfactory. This was particularly the case with potatoes and tomatoes.

The Branches of our Association which held garden parties during the summer months were among our most successful ones, and this plan, I think, should be generally adopted, and, besides the social side, the educational features might be enhanced by having prominent vegetable growers give addresses on subjects that had a bearing on the outstanding crops produced in the locality. The members of our Branches should meet at least once a month during the year to which

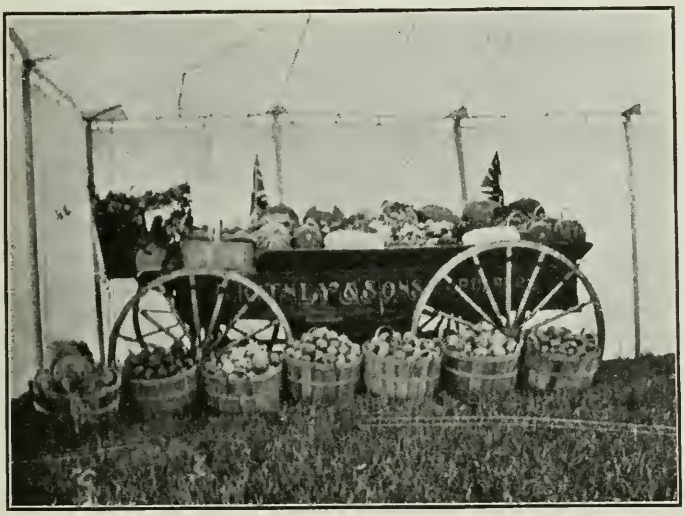
meetings the younger vegetable growers should be specially invited and the questions discussed at the Annual Convention as given in the Annual Report might well be reviewed.

We were able to send out a number of speakers to give talks in different parts of the Province and their addresses were well received.

The forward movement taken several years ago by inaugurating Field Crop and Garden Competitions is continuing to meet with the approval of our members.

I wish to congratulate our Vegetable Specialist on the good work he is doing in the different parts of the Province in assisting the growers to combat the many insect pests and fungous diseases which attack their crops, and considerable success has attended his efforts. The testing out of the different fertilizers has also proved invaluable.

The Membership Competitions will be continued this year. In 1921, Ottawa won the first prize, Sarnia Independent the second, and the Waterford the third.



Gardener's Exhibit, First Prize, Peterborough Exhibition.

Many of our members are contemplating making additions to their greenhouses or building new ones in order to meet the demand for early vegetables and now that the price of glass has decreased fifty per cent, this will materially benefit those who intend building this year.

The judges last year in the Garden and Field Crop Competitions were selected by your Board of Directors, and, as usual, they were paid services and expenses by the Department. In former years the crops and gardens were judged twice but last year owing to the increased cost of travelling the judges were only required to visit the plots once. This proved more satisfactory than the method adopted previously, and I would recommend that it be continued in 1922. In order that we may arrive at a uniform system of judging there should be a Short Course for our Vegetable Judges. The work will never be entirely satisfactory until this is done. If it cannot be arranged so that the Short Course can be held during the growing season, we should, at least, have a conference of our judges so as to endeavor to arrive as near as possible to the required standard.

The Garden Competition has proved a valuable adjunct to our work and it has encouraged the growers to improve their surroundings, and take more care in the appearance of their places. While I know that the vegetable grower in the summer season is overwhelmed with work, yet I am confident that a few hours devoted to the planting of shrubs, trees and flowers around his home would add materially to the enjoyment of his family. The wives and daughters and younger children would, I am sure, become imbued with the idea of beautifying the home surroundings, and would become better satisfied in their strenuous struggle for financial gain. With this end in view we have placed on the programme an illustrated address on the growing of flowers in connection with vegetable growing, as a financial adjunct, which I trust will prove interesting and of educational value.

In previous years all prize winners were obliged to exhibit at the Canadian National, Central Canada, Western Fair and Kingston Industrial Exhibitions. In many cases the best products of their prize-winning fields had been disposed of before the Exhibitions and in order to retain the prize money won in the Field Crop Competition, owing to the regulations, they were obliged to send inferior stock as their exhibit. For the past couple of years the regulations were changed and only the 1st, 2nd and 3rd prize winners were obliged to exhibit. This decreased the display at the Exhibitions materially and I have been wondering if the time has not arrived when some of these exhibits might well be cut out, particularly as the stuff shipped long distances arrived in many instances in very bad shape and had to be thrown out, rather than placed on the tables at the Exhibitions. I would recommend that the prize winners be only obliged to exhibit at the Canadian National Exhibition and we should endeavor to put up a display that would be worthy of an organization such as ours. This would mean a great saving, as growers would be relieved of trouble in preparing exhibits at a time when they would be exceedingly busy with other work. The Manager of the Kingston Industrial advised me that he did not consider that the exhibit was worth the prize money that they put up and asked that it be discontinued. Complaint has also come to me from the Secretary of the Western Fair in this same connection. It is, however, up to your officers and directors to decide what will be done in this regard.

I trust that the crops in 1922 will be large and that the financial returns to the men who work as hard as you do will be great.

I thank you for your hearty co-operation and the unanimity which has prevailed during my term of office and wish you every success.

J. R. Berney: When the express charges on goods shipped are paid in advance there is very little care taken of them in transit because the Express Co. has the money, and they do not handle them nearly as carefully as those goods that go C.O.D.

J. Lockie Wilson: In shipping your vegetables to those fairs, I would strongly recommend that there be a piece of corrugated card board put in between the layers, that every tomato be wrapped in paper, and be pressed in pretty firmly, and then the basket put in a box. That is the way the stuff seemed to come to our fairs in best shape. If you ship a basket to the C.N.E., for instance, the express cars are badly congested, when the express man comes along he is in a hurry and throws them in roughly and they are bound to get damaged. The basket, it seems to me, will not bring the fruit to the exhibitions in proper shape, unless it is boxed.

ONTARIO SHOULD SUPPLY HER OWN POTATO MARKET

Henry Broughton, Sarnia

My subject is on the question of Ontario growing her own potatoes, and applies more generally to the wholesale grower or truck farmer than to the small or intensive grower.

Ontario does very well at present in so far as growing late potatoes is concerned, but we are far behind in the matter of grading.

In looking over the wholesale market reports I find New Brunswick stock reported as selling for 25 cents per bag more than Ontario stock. Why this difference? I consider it is largely a matter of grading.

The Maritime stock has a good reputation on our wholesale markets, while Ontario potatoes as marketed in car lots have little to recommend them to the wholesale buyers, because of the mixture of varieties, both in color and shape, and lack of uniform grading.

Potatoes being sprouted for early crop.

Potato growing in the Maritime Provinces has become a specialized industry. A suitable soil, favorable climatic conditions, good transporting facilities, combined with the advantage of large markets have made the potato crop one of the staple, or cash crops of that section.

In addition to the above favorable conditions which produce potatoes of fine appearance and good quality the New Brunswick growers grow principally white stock nicely graded, which gives the growers of that section an advantage on the Ontario market, as wholesale buyers want a uniform grade, in size, color and shape.

Present conditions in southern Ontario are not so favorable as we have no system of grading, and also have too many varieties.

In Ontario we have a splendid country in which to produce the finest quality of potatoes in abundance, and yet we find Ontario importing large quantities of potatoes from the United States every year.

In the southern counties of Ontario we can produce early potatoes ready for market in car lots by the middle of July in an ordinary season.

I find in looking over the monthly report of the "Trade of Canada" that during the months of July, August and September of last year, there were imported into this country from the United States 228,736 bushels of early potatoes valued at $301,190. I also find that for a period of six months ending September

29th last year, there were 423,342 bushels of potatoes imported from the United States at a value of $491,027, or nearly half a million dollars in six months for potatoes alone, and a large percentage of this amount came to Ontario.

I have travelled through the southern counties of Ontario, and I believe a large portion of the land is suitable for potato growing and would bring the growers of this province a large revenue if potatoes were included in their rotation of crops, and thus bring a large amount of money to our growers which, in the past has gone to our neighbors to the south of us.

The potato grower who has suitable soil should lengthen his selling season by planting early varieties early in April, which should bring his crop on the market during July, thus making his selling season three months longer than usual, thus supplying our own market at its most profitable period. The commercial or large grower must grade his stock to meet competition on the wholesale markets.

The Americans and the growers of the Maritime provinces have always beaten us in the grading and general appearance of their potatoes and it is up to the growers of this province to grow large, clean stock for our wholesale markets.

Small inferior potatoes decrease the consumption, while fair sized good quality stuff increases it.

Weather conditions being favorable the grower can produce a heavy crop of large sized potatoes instead of a large crop of small sized stuff. This difference of size depends largely on the richness of the soil, and the manner in which the seed is cut.

Seed cut to one or two eyes and planted on good suitable soil should give you a heavy crop of good sized potatoes with very few small ones.

The first aim of the commercial grower should be quality, the second quantity, and the third should be to market his crop co-operatively in car lots.

To the commercial grower who has suitable land enough so that he can rotate, I would recommend that he plow under a crop of clover or other green crop the previous fall to provide the nitrates and humus, and then use a high grade fertilizer at planting time using a grade of 4-8-4 or 4-10-4 with about ½ ton per acre which would mean a cost of about $20.00 per acre for fertilizer.

Some may say we can grow potatoes without fertilier. Very well, but if you can grow good potatoes without fertilizer, you can grow more bushels of much better quality with fertilizer. By actual test I have increased the yield by using fertilizers from $40 to $60 per acre; by using fertilizer containing phosphate and sulphate of potash, you also get a high quality potato.

Among growers who have only a small acreage, potatoes should be grown co-operatively. By that I mean that growers should co-operate in the purchase of potato machinery such as planters, weeders, diggers and also get their fertilizers, seed potatoes, and bags in car lots thus saving cost in making purchases.

They would also be able to ship co-operatively, say six to a dozen men uniting to load a car.

Early potatoes are a profitable crop to grow. During the season of 1920 I sold 782 bags at a value of $1.497.30 from a five acre field, which is nearly $300 per acre, and this was on a field that has grown potatoes continually for the last fifteen years. I consider this a profitable crop to grow.

Q.—What fertilizer is best for potatoes?

A.—I would recommend a 4-8-4, or a brand stronger in phosphate and potash.

Q.—Does a fertilizer improve the quality of potatoes?

A.—Yes, especially sulphate of potash.

Q.—What rotation is best to follow?

A.—Clover plowed under followed by potatoes, then wheat, then barley or oats, seeded to clover.

Q.—Can we grow potatoes year after year without change?

A.—Yes; but it is not advisable to do so because of bugs and disease.

Q.—Is it profitable to change seed every year?

A.—In our district we consider a change of seed every year very profitable providing you get potatoes free from disease. We have tried Northern Ontario seed, but do not like it as well as seed from the Maritime provinces, the Dakotas, or Wisconsin. We get good results from New Brunswick inspected and certified seed.

The varieties I prefer are: Early Ohio for first early and Cobblers for second early. Ontario growers need potato machinery free of duty, and we need a uniform grade for the commercial market. In conclusion I would say that Ontario can, and should, produce her own potatoes the year round.

F. G. Fuller: What is the difference between sulphate of potash and muriate of potash for the potato crop?

Hy. Broughton: The muriate of potash has a tendency to make your potatoes soggy, and the sulphate of potash makes them dry and mealy. Do not use muriate of potash if you want quality.

J. Lockie Wilson: When these carloads are shipped in your section, and eight or ten farmers go together and ship one or two carloads, that would mean that those farmers in that particular locality would be required to have the same variety of potato.

Hy. Broughton: Yes.

J. Lockie Wilson: Would you ship Early Ohio and Irish Cobbler in the same car?

Hy. Broughton: In the early market it is all right to do that, but as a rule it is not wise. Where there are a lot of small growers it would be permissible, if you know your market. If you don't know, don't do it.

A Member: I have heard of growers using small quality stock.

Hy. Broughton: That depends on whether your potatoes have matured. For instance, if you take a small potato from a hill of potatoes that was green it is all right, but if you take from a hill matured it is not right.

J. Lockie Wilson: How deep would you plant your seed in sandy soil, with a gravelly subsoil?

Hy. Broughton: I would just keep away from the gravel.

A Member: What manures do you use?

Hy. Broughton: I use about ten loads of manure per acre, and I have used about 800 pounds of fertilizer in addition to that. But I am going to use the fertilizer this year. I like surface cultivation the best. The nearer you can keep your potatoes to the top of the soil so long as there is moisture enough, the larger crop you will get.

J. Lockie Wilson: How high do you let your potatoes grow before you cease harrowing?

Hy. Broughton: Four inches.

A Member: Would you recommend 4-8-6 rather than 4-8-4.

Hy. Broughton: Yes, potatoes are a heavy potash feeder.

A MEMBER: How much seed do you use?

HY. BROUGHTON: We sow in a drill about 12 to 15 inches apart.

A MEMBER: How far apart are the rows?

HY. BROUGHTON: 28 to 30 inches.

A MEMBER: Do you think one eye is as good as two?

HY. BROUGHTON: One is better, but it must be a good one.

W. COOKE: Can you get seed of the Early Ohio variety?

HY. BROUGHTON: You can get good seed in Dakota or Wisconsin.

W. COOKE: How does it compare with the Cobbler as to yield?

HY. BROUGHTON: About the same.

W. COOKE: Don't you think, then, it would be well for our Ontario Department to encourage growing Early Ohios for seed in the Maritime Provinces and Northern Ontario, so that we could get our seed in our own country.

HY. BROUGHTON: That is a good point. I have gone so far as to get some seed from Wisconsin and have a man in Northern Ontario grow it for me, so that I may have my own seed.

W. COOKE: We have been booming for several years the Cobbler seed as an early variety. Now as the Ohio is a much superior potato for early growing, it looks to me as if possibly we are on the wrong track in our early potato variety.

HY. BROUGHTON: We are losing two or three weeks of the early market and giving our money over to the Americans to supply our market.

A MEMBER: Do you spray the early potatoes for the leaf hopper?

HY. BROUGHTON: We have not done that yet. If the blight does strike them they are away before it can affect the potato.

A MEMBER: What spray do you use?

HY. BROUGHTON: For the blight we use Bordeaux.

A MEMBER: Do you ever use dust?

HY. BROUGHTON: Not yet. I would like some information about that.

SAME MEMBER: I used dust last year and I found it much better than the spray.

MEMBER: What is the best yield you have had of Irish Cobblers per acre?

HY. BROUGHTON: About 300 to 350 bushels per acre. We don't let them mature. It would increase the yield considerably if we let them stay in the ground two or three weeks' longer, but the price received would be lower.

A MEMBER: Do you ever sprout your seed before planting?

HY. BROUGHTON: We don't, but we should. Take the Ohio, for instance. I have already stated that as a province we are losing our market for two or three weeks, but if we were to sprout our potatoes we would be at least a week earlier. If the growers would do that generally we would have our supply here a week or two earlier than we now do.

J. LOCKIE WILSON: After cutting, do you let them lie before planting?

HY. BROUGHTON: Get them in as quickly as you can.

J. LOCKIE WILSON: The reason I asked that question, was that I have heard it said it is better to let the potato heal a little and to dust on some lime before taking it to the field. The reason of that was that there was a considerable loss of moisture in the potato when cut and if the ground is dry it naturally absorbs some of the moisture from the tuber.

HY. BROUGHTON: I have heard the same thing of plaster of paris.

A MEMBER: Plaster is a great deal safer to use than lime.

A MEMBER: Would irrigation be beneficial to it?

HY. BROUGHTON: It would if it were a dry season. Last year I got only two pounds per hill off the same field where the year before I got seven, due to weather conditions.

A MEMBER: What time did you plant?

HY. BROUGHTON: About the middle of April.

A MEMBER: Have you ever tried Early Eureka?

HY. BROUGHTON: I have not tried it myself but I know of some that have. We ship a great many of our potatoes to Fort William and Port Arthur, and they have a great many of a variety called Quick Lunch up there, and they beat our market by about a week last year. It is a little earlier than the Ohio.

C. FRETZ: What do you figure that potatoes take out of the soil?

HY. BROUGHTON: I don't think they are hard on land. Of course it takes a lot of potash out of the ground, but, as I said before, I have grown them on the same field for fifteen or sixteen years, and I had as good a crop the year before last as ever.

C. FRETZ: What is your experience in following up with another crop after the potato?

Thedford Celery Marsh.

HY. BROUGHTON: If I had land enough of the same quality, with condition to rotate, I would use wheat, or if I wanted a garden crop I would use cabbage.

F. G. FULLER: Does the potato crop take much humus from the soil?

HY. BROUGHTON: No, I don't think it does.

F. G. FULLER asked if ashes were a good fertilizer for potatoes?

HY. BROUGHTON: No, it has a tendency to produce scab.

J. LOCKIE WILSON: Would not a light coating of first class hardwood ashes on the ground of a potato field be good for the potatoes?

HY. BROUGHTON: Not in the quality—it is apt to produce scab.

J. LOCKIE WILSON: I am not disputing Mr. Broughton's statement because he is a skilled expert, but, as a farmer myself, and a potato grower for a good

many years, I have always endeavored to get all the wood ashes I could on my land, which produced magnificent crops of potatoes, and I think the scientific men at the colleges will tell you that wood ashes are a splendid fertilizer for this crop.

Hy. Broughton: I might have qualified my statement by saying it depends on the soil. If you put wood ashes on sandy soil it has a tendency to produce scab, but on heavier soil I don't think it would have that effect.

J. R. Berney: Low sands are liable to be sour and neutralizing those acids in the land would kill the effect of lime. I find out on my soil the ashes do not make the potatoes scabby.

Hy. Broughton: Where you are using a lot of acid phosphate you will not get very much scab. The acid phosphate seems to kill it.

NORTHERN GROWN POTATOES FOR SEED

W. A. Broughton, Whitby

The subject I have been asked to address you upon is, "Northern Grown Potatoes for Seed," and I will simply relate our experiences in this connection.

Importance of Good Seed Potatoes

It is hardly necessary for me to emphasize the importance of good seed potatoes. In my opinion, they are potatoes which are grown from selected stock, true to name and to type, of medium size, free from disease and preferably grown in a northern climate. It is most important that they be free from such diseases as Dry Rot, Black Leg, Mosaic, Leaf Curl and Rhizoctonia.

Advantages of Northern Grown Seed in Other Localities

The idea if planting seed potatoes grown in a northern climate is not a new one. I have heard my father say it was practised in England sixty years ago with profit. He spoke of one particular field of twenty acres, half of which was planted with seed from Scotland and the other half with local grown seed. The yield from the ten acres planted with seed from Scotland was two hundred tons, and from the local grown seed one hundred tons. Northern grown seed potatoes are used in many of the States to the South, viz. Texas, Virginia, Florida and Maryland. In 1910, I was a member of a party of five who went to Southern Texas to grow potatoes for the very early market. It was our intention to plant northern grown seed. On our arrival there we found that the most successful growers planted seed grown in Wisconsin, Minnesota and the Dakotas. We planted seed from Wisconsin. The crop from locally grown seed was a failure. Our yield was fifty bags per acre.

The reason for the advantage of northern grown seed over locally grown seed has been attributed to immaturity of potatoes. In my opinion, there are other factors, such as climate, and comparatively new soil. Climate is probably the more important because of the long bright days and the short cool nights in the growing season.

Experience in Ontario with Northern Grown Seed

In Ontario, our experience in the use of Northern grown seed is confined to the early varieties, Irish Cobbler, Early Rose, and Early Ohio. In the seasons from 1912 to 1916 we experimented with seed grown in Muskoka. The results

indicated that it was an advantage to plant this seed from the North. In 1916, we first planted a quantity of Northern grown Early Ohio and Early Rose seed. These potatoes, grown in Thunder Bay District, were clean and free from disease. They produced an excellent crop. Although the potatoes were dug before maturity, the yield was 160 bags per acre. Locally grown seed produced a smaller yield.

In 1917, the same varieties of seed potatoes were obtained from the same district. The yield, only 100 bags per acre, was reduced because disease was present in the seed. Locally grown seed was free from disease and produced a better crop.

In 1918, locally grown seed was planted and yielded a crop of about 100 bags per acre. In 1919, we had our first experience with Government Certified Seed Potatoes. These potatoes, Irish Cobblers, grown in Thunder Bay District were delivered in the fall of 1918. On arrival, it was found that four per cent. were in an advanced stage of decomposition due to dry rot. There was further loss from the same cause in winter storage. After planting there was another loss of ten per cent. from dry rot in the seed. The yield was 100 bage per acre. We selected some of this Government Certified Seed and treated it with a solution of formalin in order to grow seed for the 1920 crop. These selected potatoes produced seed of very good quality, being medium in size and free from disease.

In 1920, the above mentioned locally grown seed was planted. The stand was perfect. Eleven weeks after planting, the crop was harvested and the yield was 1,500 bags from twelve acres. A small crop grown from the same seed were allowed to mature and yielded at the rate of 200 bags per acre. This would seem to show that seed selected from Northern grown stock will produce an excellent yield in the second season..

In August 1920, I visited various districts from Port Arthur to Winnipeg for the purpose of inspecting the growing crop for seed purposes. The Government representative, Mr. Davis, of Port Arthur district, was very kind and obliging in driving me around in his car to see a great number of the growers. My observations were very disappointing because I only saw one field in the Port Arthur District that was suitable for seed. Even this field of Irish Cobblers was infected with Black Leg to the extent of one per cent. All the other fields inspected were badly infected with various diseases. In the Rainy River and Winnipeg Districts I could not find any potatoes for seed purposes. I realized that the only Northern grown seed I could obtain was from the above mentioned field. The owner agreed to take out all the plants infected with Black Leg. Two weeks later I bought the potatoes in his field at the high price of $2.65 per bag and 58 cents per bag freight. These potatoes were planted in 1921. The stand was only seventy per cent., due chiefly to Black Leg, although there was some Dry Rot. The yield was only about seventy bags per acre. This lot of Northern grown seed potatoes was the most unsatisfactory. Early Ohio seed grown in Sarnia District yielded about 120 bags per acre.

Conclusions

1. Northern grown seed potatoes from selected stock, true to name and type, and free from diseases, will produce a greater yield than locally grown seed under similar conditions.

2. Northern grown seed as produced in the past, is a source of disappointment and loss to the buyer because the seed is contaminated with various diseases.

3. Northern growers apparently do not realize the necessity of producing seed potatoes free from diseases. Until this is realized there will be no demand for their products.

4. Government inspected and certified seed in our experience, is a disappointment, due in my opinion to lack of co-operation of the growers with the Government officials.

5. In future, until we are assured of seed potatoes free from diseases, we intend to select and grow locally our own potatoes for seed purposes.

MEMBER: What time do you plant the potatoes you select for your own seed?

W. A. BROUGHTON: About the first week in June. I believe the best plan is to plant them about the first of July, but we planted them about the first of June and on soil that was not too rich—on a clover soil without manure. We wanted not too large a seed. They were ripe in September.

THE CHAIRMAN: The Ohio crop that you had this year, were they grown from your own seed?

W. A. BROUGHTON: From Sarnia seed. I think Mr. Soames' seed came from Wisconsin.

I would not use ashes on potatoes if anybody gave them to me, not because potash is not good for potatoes but there is a tendency to scab. The speaker here told of an experience he had in putting a field into potatoes where they used to burn brush, and, he said, you never saw such a scabby looking lot of potatoes. The value of ashes, I think, wants looking to a little—there is probably 6 per cent. of potash in ashes. You are paying at that rate quite quite a price for these ashes, especially after the freight rate is added thereto. Ashes may be all right on muck soil which is very deficient in potash.

A MEMBER: Would you recommend wood ashes for muck land?

W. A. BROUGHTON: I would not recommend it for potatoes, but I am satisfied that muck land requires potash more than anything.

A MEMBER: The man who got first prize in our district two years ago had so much lime in his potatoes that you could see it when you dug down.

J. R. BERNEY: I don't think that the lime so much affects the potatoes as the fungus in your seed potatoes. You might have gotten seed that was affected by scab and you could hardly see it. My experience with ashes is that when put on in proper quantities they will not scab potatoes.

W. A. BROUGHTON: I put all the ashes I can on onions and cabbage or anything of that kind.

A MEMBER: In the planting of potatoes, do you use machinery altogether?

W. A. BROUGHTON: Yes.

A MEMBER: On planting a late crop of potatoes, I have seen them plowed under. Would you recommend that?

W. A. BROUGHTON: The only advantage in that would be in a dry season they would be able to withstand the drouth better. I would rather plant with a machine than plow them under.

G. H. POAD: It was suggested just now by Mr. Henry Broughton that it would be a wise thing for us, if it was profitable to us, to appoint a small committee. Mr. Broughton stated that he was making arrangements with some potato growers in Northern Ontario to grow seed for their own branch there. Would it not be a good idea for us as an Association to make some arrangements whereby potatoes might be grown for seed for the Association in general? If it is beneficial to us, it would be well to appoint a committee to go into that matter.

J. R. BERNEY: I cannot speak from practical experience but I understand the clay belt raises the best potatoes.

W. A. BROUGHTON: I would like a number of growers to join together, put capital in, perhaps $1,000 each if it was required, and appoint a man up there to make it his business to grow your seed. I believe we would make 20 per cent. on the venture.

J. A. BERNEY: I would suggest putting that seed on a new cleared land that never had any crop on it, because then you are free from disease in the land.

C. FRETZ: Can you explain to me how we got those cars with Northern grown potatoes down here with the Government's inspection certificates on the bags and they have let them go through, some of them diseased?

W. A. BROUGHTON: I believe the Government officials have been perfectly sincere and have made every effort, but the growers have not co-operated and tried to back them up.

C. FRETZ: If we have to pay $3.50 a bag in the fall for Northern grown seed, it is time we had something reliable.

W. A. BROUGHTON: There is this difference between apples and potatoes: if the grower is not sincere they can't get at him.

C. FRETZ: Would they not have to be inspected from time to time by the inspector before he would dare to put a seal on?

W. A. BROUGHTON: Yes; I can't see how they can get by.

A. H. MCLENNAN: I am very much interested in this, as this certification work comes directly under me. Mr. Broughton bought a car of potatoes which were not certified. They care very little for the Irish Cobbler in Northern Ontario, in fact they have a better crop from the Green Mountain. The Irish Cobblers as a rule are put in the poorer parts of the field. During 1920 I was over the whole section of Northern Ontario twice. The tags on the bags are not put on until the stuff is ready to put in the car and they are put on by the inspector himself. We inspect at least one in five bags, and if there is any trouble about those, then you can come back at the grower. There is no legislation of any description that permits us to come back at the grower, except that we can drop him next year. It is unfortunate because you have no hold on such except a moral one, and that is a small consideration with most where the dollar is concerned. Three or four cars of seed potatoes were shipped in to Northern Ontario from New Brunswick in 1919 which should never have gone in there. John Edmunds' seed has stood up every year.

In the Rainy River country the only thing they have got is scab. They have the scabbiest looking lot of potatoes you ever saw, otherwise this seed is of the best. This year, to overcome the difficulty of obtaining reliable seed from Northern Ontario, we are working in the Southern part of the Province, in fact, about 60 per cent. of the certified seed this year was grown in Southern Ontario.

I want to get away from this fact, that the Northern growers have an idea that the field was all theirs; but that is not the case as we can grow just as good potatoes in the South as in the North. The only thing we have to watch for in the southern section is the leaf hopper and the aphis because they spread the disease that we are fighting the hardest—Mosaic and Leaf Roll. I would invite the assistance of every man here. We have in the Parliament Buildings the score of each man. We knew in 1920 that in a number of cases seed was sold on field certification though it did not reach the standard. Last year we changed that. The man gets his grading and nothing else .

W. Cooke: We have with us an expert potato grower from Peterboro, Mr. Williams. A few years ago when this idea of potato seed in New Ontario was first brought out—Mr. Williams had been bringing in seed from New Brunswick. He sent me in some and I also got some New Ontario seed. I also tried some of my own ground seed, and I kept very strict data, and the New Ontario seed led all the rest. That is the other side of the question, and I think it is only fair that the meeting should have that because I took extra precaution to find out which was the best seed and the New Ontario seed I got was certainly the best. Last year I could not get New Ontario seed, and I had some New Brunswick and some of my own selection. I planted them late, July 1st, on sod land. They were grown as well as any seed could be without irrigation. They were grown late and hoed twice. And that product was well taken care of and we had very poor results in the 1921 crop from that seed. Now I advocated growing my own seed that way formerly, but I was experimenting in late varieties then and with the Rural New Yorker you can do that. You can't hurt the Rural New Yorker strain in Old Ontario, but the Cobbler is useless.

Preparing for Exhibition.

A. H. MacLennan: If you can get a man up there who will grow them, I will guarantee that you will be well looked after as to disease inspection.

Chairman: Supposing such an arrangement was made, could it be carried out under your supervision?

A. H. MacLennan: We would look after them. We have certain growers in the North, and that takes in Bruce and Simcoe. It practically makes no difference as far as we can see, you get the same effect in that district as in Northern Ontario. I have in my mind at the present minute something which shows you what you are up against in this case. I have a potato in my office which was shown at the Winter Fair in Guelph as Gold Coin. You all know that has a green sprout. Now the sprout on that potato is blue. As it happens I have a Dooley right alongside of it, and you would have a job to tell the two of them of them apart. Dr.

Zavitz and myself thought at Guelph it was not true to type, and upon growing it found it has a blue sprout. You should get some one to grow seed such as Williams, at Peterboro. He grows as fine a grade of Cobbler as you can find anywhere from a vitality standpoint—grows it on muck, and there is only one thing which keeps it from certification, he has a bad dose of rhizoctonia. If he could borrow some of those ashes from M. Berney he would get over that. You have an acid soil. We know before we start that if there is an alder tree around on a piece of land there will be rhizoctonia. If this disease once gets into your soil, there is very little you can do to get rid of it. The only thing is to treat the soil to get it into an alkaline condition. If you get it too alkaline then you get scab.

I can give you the names of men who are good growers, and we are sifting out the make-shift artist in the potato game. Two years ago when I took hold of the work, there were only about 30 per cent. of the fields entered which stood up to certification standard. We only ran through about 165 or 170 fields last year, but 85 per cent. passed. If you want to nominate a committee, or form a company, and grow your own potatoes, all well and good. We have had some trouble with our inspectors, but we are gradually getting rid of incompetent ones. We are all human, we all make mistakes, but the problem is to make as few as possible. I was sorry that Mr. Broughton bought those potatoes on his own initiative and that is the reason why his potatoes were not up to the standard this year.

J. Lockie Wilson: We are very anxious, of course, to get good seed. Do you know of any section where we could get some farmer in the north county to plant say 50 or 100 acres of potatoes for the Vegetable Growers, under your supervision, so that we would know exactly what kind of seed he was planting. I am sure the Vegetable Growers would be glad to patronize that grower and buy that seed, if it was done under your supervision, and the care that you would naturally exercise to see that the Vegetable Growers get good seed free from disease.

A. H. MacLennan: There are men through the Huntsville district, and through Muskoka, there are districts north of Toronto and the Peterboro district, where seed stood up in first class shape last year. Mr. Nodwell of Hillsburg has at the present time about 1,600 bags of potatoes that are very good seed.

If you want to go ahead with your scheme we can tell you where the men are who are growing potatoes and who we think would be satisfactory, but there is one thing we would have to do and that is to make definitely certain that the man is not growing more than one variety on his farm. It is so easy to get varieties mixed when two are grown—a few of one variety roll on the floor, someone picks them up and they are tossed into the wrong bin. You cut one potato into as much as four parts, and what happens—why you get that number of hills off type in the variety. For that reason we have this year raised the standard on field work, to 1 per cent. of foreigns in the field—the highest standard of anywhere on this continent. The Dominion Government inspection is far ahead of any of the others, but the human element comes in every time.

G. H. Poad suggested that the delegates appoint say three or four men with Mr. MacLennan to meet to-day and bring in a recommendation later on. He suggested the following: Mr. Broughton, Sarnia; Mr. Cooke, Cataraqui; Mr. Fuller, London; Mr. Rittenhouse, Vineland Station. The above mentioned gentlemen were appointed as a committee to bring a report in, later in the day.

The Chairman: With reference to grading of potatoes, about two years ago we appointed a committee to go before the Government with regard to this. The Dominion Government representative is here to-day, and that matter is coming

before the Government again. The question is whether it would be wise to either re-appoint that committee or appoint another committee in the event of that coming up. He then asked Mr. Burrows, the representative of the Dominion Government, to explain that.

Mr. Burrows: About two years ago, a Potato and Onion Conference was called in Ottawa, representing the Potato and Onion Growers throughout the Dominion. At that time the question of putting through a Grading Law much after the style of the Grading of Apples and other products. was discussed and a resolution passed recommending the a Bill be placed before the House making law the grading of potatoes. The Bill was put on the papers for last session, but due to the fact that it was put off from time to time and the premier having to leave for overseas in a hurry, the matter was not brought before the House. We have been assured that this time it will be, but in order to ensure its being passed the various Potato Associations throughout the Dominion have been passing resolutions again endorsing that Potato Grading Act. It is only a matter of assuring the Government that the Potato Growers are behind the resolution which they passed some two years ago. It was thereupon moved, duly seconded: "That this same committee act and that Mr. Burrows be added thereto." Carried.

ASPARAGUS

Harper Secord, St. Catharines

My subject for discussion with you is asparagus. While I have absolute confidence in my methods I don't ask you to accept me as any expert authority. I only bring one man's experience with one acre. This vegetable is not a general crop, neither is it an easy one to grow without a full knowledge of its habits and requirements, and while a good plantation is a source of profit a poor one only yields disappointment. Once established the right way a bed can last a generation and it brings early money, a fair annual return and, of about 25 different crops which I grow, it is the only one reasonably proof against failure.

Seed.—I do not want to discourage you in the very beginning by telling you how far back I feel it is necessary to go to be established with this crop on the best foundation. Most growers begin with the plants, not even with the seed, but the breeding of the seed is my choice. If you are so fortunate as to have access to a good plantation you may this year mark those best hills, and next year having found them to be in the right proportion of male and female plants in proximity to one another allow your selection to ripen in advance of the rest of the bed, thereby precluding any danger of cross-fertilization with inferior plants.

Plants.—While it has taken us two years to have this good seed, contrary to general belief only one is required to produce the right plant. And I would like to impress upon commercial asparagus growers the importance of good plants, and in this a past plant grower's experience may be a benefit. While I realize that every prospective asparagus grower has not the opportunity afforded for seed selection as the well established grower has, yet by procuring from a reliable seedsman a proven and preferably rust resistant strain he is a good beginner.

Before sowing we soak our seed 24 hours in warm water, use a handful of lime to dry it off, and add a few radish seeds. The lime whitens it. and shows how otherwise black seed runs out of the drill, the radish guides the wheel hoe before the Asparagus comes up. It takes about three weeks to germinate, and it is a

good plan before and after to severely rake across the rows with a garden rake and also to poison it as soon as enough top forms. Sow in rows one foot apart and one inch deep. These are small but necessary details, neglect of which only invites failure. Now with attention to cultivation, fertilization, poisoning and thinning out to approximately 2 in. apart in the row next spring we can plow out good one year old plants; and it is my experience, and all authorities agree that no other can quite equal good yearlings. And here I would like to correct a generally existing misapprehension in favor of older plants. Down in New Jersey where millions of these plants are annually grown in a commercial way, they are scooped up and kicked out by potato diggers and graded into 1, 2, and 3 year old plants, and while no one should be under the necessity of misrepresenting their business in order to honestly prosecute it, the public have become wrongly educated to the supposed superiority of older plants. Years of experience in growing and handling asparagus plants has taught me the characteristics of a good plant as being denoted by the large eyes and fleshy rootstalks in contradistinction to the smaller eyes and slender roots of the inferior ones; and if, in preparing to plant, one-half to two-thirds were discarded it is an inconsiderable sacrifice compared to the final reward.

The Permanent Bed.—In setting the permanent bed we want a good location. My first one in considering convenience to the henyard was otherwise unsuitable. I don't like the hens as bug hunters anyway, as there is no method in their work, and while there may be exceptions to their use I cannot recommend them. The next time I took advice from a book, and while books are at times the best company we can be in, you cannot ask a question of the best one ever written. The book said plant them 12 inches deep, and I ought to have known that putting them down in the depths of that cold yellow sub-soil was more of a grave than a home for them as it proved to be. Guided by these failures in our third and present bed we set them 7 inches deep in rows 4½ feet apart. We threw a straight furrow each way with a two horse plow and after running a cultivator in the bottom spaced our plants 18 inches apart and covering 2 inches. Subsequent cultivation consisted of harrowing at frequent intervals which operation just nicely filled the trenches as required. This supplemented by the ordinary one horse cultivator levelled the ground by fall. But during this time do not forget the bugs. Your asparagus represents to date a lot of hard work, and painstaking care, and you simply cannot afford at the critical time to turn your back upon it for 48 hours and have it ruined beyond redemption. That is how quickly they can eat it up, and that is just what your loss will be. As soon as there is sufficient growth use arsenate of lead and spread the feast generously for this pest.

Manure.—In mentioning fertilizers we must remember that this plant is the hog of all the vegetable family. Of course your ground should be in good heart in the beginning, but during this first year in those open trenches is a good place to use fertilizer, especially well rotted manure. Different opinions and practices exist as to the best time to manure the asparagus bed. Immediately after the cutting season finds favor with most growers. While there may be some especial merit in this, manure in midsummer is not always so readily available, besides other work is always crowding. I feel that just so long as manure equal to or in excess of requirements is used the time of its application is not so important. We put it on during the early winter months. It is the foliage

we want, the health and volume of which will be reflected in next year's cutting of shoots. So manure applied in the fall of 1921 will not show material results until the cutting season of 1923.

Salt, etc.—I do not think asparagus should be the subject of treatment foreign to any other vegetable. It responds to heat, moisture, fertility, etc. governing plant growth in general. Still strange notions prevail respecting this plant. An old countryman described to me the elaborate methods employed in England. An excavation was opened, and all the accumulated rubbish put in. This could do no harm, and no doubt besides the element of fertility contained in the use of this waste material drainage was made and though this crop is indigenous to the seashore drainage is necessary. This brings us to the use of salt. Some growers contend that salt is essential, and while it is beneficial it is only so as it is to other vegetation. Its use can be traced to the Old Land, where asparagus is grown in beds, and where salt more perhaps than for any other purpose was used to kill weeds and grass otherwise hard to eradicate, besides the practice of using meat brine carrying nitrogenous fertilizer.

Intensive Cultivation—Onions, Lettuce and Cabbage.

Cutting.—Cutting asparagus is a sore job. It is the best plan for all the help to turn out each morning, for it is very necessary that it be cut early. Cut it before it gets too hot, and get it into the shade and away to market. Whatever else you do, do not assign as a regular occupation that all day cutting of asparagus to some one poor individual. You cannot have a good product in this way, besides it is a cruel operation to keep a person so long engaged. We cut it in 11-quart baskets the length of the baskets width. We leave all crooked, small and otherwise inferior on the ground. The cutting season lasts about seven weeks, beginning about May 1 until June 20, the advent of green peas in the market being the signal to cease.

Marketing.—According to your market's demand must be your method of supplying it. The commission and general market prefer it in 24 uniform bunches per 11-quart basket. Locally the grocers sell considerable loose by the pound, and the Italians buy it also this way, bunching it themselves to suit the trade. Our own is a select trade in Toronto and Montreal and we are particular to supply just as wanted. There is good money in well grown and properly handled asparagus, but a lot that is offered in the market does not appeal to me. Asparagus cut one-third to one-half below the ground represents just that much waste. It is usually

tough and bitter and spoils our trade. Some markets prefer it blanched, but ours demand green and a lot of people ignorant of best practice are supplying neither.

CULTURE.—Our methods are not those generally employed. We never plow. We always leave the tops on the bed and spread the manure among them in the early winter. The first hot day in April when the ground is dry we double disc both ways or as often as necessary, and then harrow down. Then we cultivate between rows. But our most important operation consists in using a five spaded Clark cutaway disc in straddling the rows as often as weed growth necessitates. This absolutely smothers all the weeds in the row during the cutting season. Any perennial weeds escaping are destroyed by the cutter's knives. When our cutting season is over we have a clean patch, and we obviate that murderous practice of cutting a bed all to pieces which under any other system seems necessary in order to annihilate the accumulated weed growth of the entire harvest period, a practice representing in destruction the equivalent of a week's growth of asparagus. This described plan of cultivation depends upon width between rows. The only argument for deep planting appears to lie in the fact that each annual crown growth adds about one-third inch to the preceding, and by giving ample space in the beginning, in later years we have more soil available for covering instead of handicapping them at the start by deep planting.

ENEMIES.—Briefly, the enemies of asparagus are bugs, rust, and quack or twitch grass. The bugs are very bad, especially in hot weather, and are to be kept under control by systematic cutting and later by poisons. The rust is a tough customer, and, while in our district it occurs only occasionally, it is best guarded against by the use of rust resistant strains. Quack grass is to be simply kept out and any grower so indifferent as to allow it to gain a foothold surely courts disaster in the end, for once established in a plantation it will speedily encompass that bed's destruction beyond any measure within my knowledge to successfully combat it.

I have gone beyond my allotted time to tell you how to have a good bed of this vegetable, and perhops some man is more concerned in being rid of it. So just plant corn between the rows and continue cutting grass and cultivating the corn on top of rows, and you will have the longest asparagus season and the best corn crop you ever grew.

A MEMBER: Do you grow rust resistant Washington strain?

H. SECORD: The asparagus that I am growing is not supposed to be one of these highly advertised kinds. It was a selection we made in our own neighborhood, but there is Washington asparagus growing there and it does very well.

A. H. MACLENNAN: The Martha and Mary Washington are strains of the old Reading Giant. There is a considerable plantation at Guelph of these kinds. It is not absolutely rust resistant, it was not nearly as good as the old patch of Reading Giant at the College. Mr. Secord has mentioned the only way to get a good patch of asparagus, and that is to save your own seed. I put it five feet apart instead of 6½, and I put it down 6 inches instead of seven inches.

J. LOCKIE WILSON: I was very much interested in this splendid address of Mr. Secord's. I was in Perth once and I saw in Senator McLaren's garden a large patch of asparagus. I said: "It looks as though you had had a snow storm here"—the whole bed was white with salt. I asked if this was the general custom. The gardener, who was an old countryman, said: "We get magnificent

crops here. and that is the way I always do it. I sow this salt on the top of this bed in the spring." Now whether that is a good plan, or whether Mr. Secord would recommend that or not, that is the way this old English gardener did in this bed of Senator McLaren. I would judge there would be ½ inch of salt over this whole bed.

H. SECORD: It will stand a lot of salt, but the salt simply makes available other fertilizing elements, and I believe that is about all the use it is to the asparagus bed, except to keep down weeds and grass, and in the old country where it was grown in beds you can understand it did this.

THE CHAIRMAN: Could you kill asparagus by using too much salt?

H. SECORD: I believe you could.

A MEMBER: I know of one patch of asparagus that was killed in this way.

H. SECORD: You can go through the country and see good beds of asparagus, but it is all in a row, and it is hard to cut your asparagus green under those conditions. I put perhaps 8 inches or 10 inches of soil over and cut through the ridge. You understand the Clark disc harrow. There is a space of about 3 feet between those discs, and you can absolutely cover up every weed that close, if you do this in time. If you can cut asparagus a week longer you will get another $100.

J. R. BERNEY: If you were planting a bed of asparagus. what kind would you use at the present time?

H. SECORD: I am not sure. A graduate from Guelph College brought some asparagus called "Grand Argentine." I made my selection from his patch. If you can get a good kind, and you have free access to the manure pile, it will always be so much better. I have grown 1,000,000 asparagus plants, and during all that time have sold to nurserymen. But I don't believe they know anything about type. I don't think a nurseryman ever asked me for any particular varieties; they just ordered so many plants.

J. R. BERNEY: I intend to put in an asparagus bed in another place. What I have in my own asparagus bed suits me perfectly well, but I have to buy the plants in order to get them well started this year.

H. SECORD: If you had access to a bed in your own neighborhood where you could save your own seed, I would advise you to do so. You can go to any patch and find variations, and if you select your own hills you can put your own name on them.

J. R. BERNEY: I have a new place where I want to plant asparagus this year.

H. SECORD: The only thing you can do is to get in touch with a reliable dealer. I have no plants to sell, but I have emphasized the point to you here as vegetable growers that, when you are starting, your foundation begins with the seed. You select that seed if you have any chance to do it, or otherwise get it from a reliable source.

W. COOKE: Will you describe a good hill to select seed from?

H. SECORD: I have threatened to take out the small ones. You cut six or seven, and the next day you do the same. But a good hill will have two. three or four, and they will be large ones. It is a bad enough job to cut asparagus, even if it is good, and if the women have to cut this small stuff it makes it the harder.

J. LOCKIE WILSON: What is the best kind of soil to grow asparagus on?

H. SECORD: Good strong soil. You want a lot of moisture for asparagus.

J. R. BERNEY: Is a sandy loam as good as a clay loam?

H. SECORD: Some claim if the ground is too hard the asparagus has a tendency to grow crooked. I would say a sandy loam is the best.

A MEMBER: In cutting, do you take the tops off.

H. SECORD: We never cut the tops. We just leave them lying there.

J. R. BERNEY: Do you believe in irrigation for asparagus?

H. SECORD: I never practised it, but I doubt it.

A MEMBER: Leaving your old plants standing, did you get some seed?

H. SECORD: We never had any trouble with that. This year I expect we will have a good cutting of asparagus because we had no seed last year.

Q.—What do you consider a good yield per acre?

H. SECORD: About two tons to the acre; which brings in from $800 to $1,200.

A MEMBER: When you are putting out your young plants in the spring of the year, do you go by the number of buds?

H. SECORD: No, according to the size of the buds. I have handled a lot of asparagus plants, and it was a long time before I finally got wise. When you are digging, the eyes are always in evidence, and the big ones always have big roots, and the slender roots *always* have small eyes.

CURRANTS AND OTHER SMALL FRUITS

J. R. Berney, Owen Sound

When the Secretary asked me to give an address on currants, and other small fruits, he must have had my Crimson Seedling Currants in mind.

My experience has been with what I call a stray seedling, which has proved to be very successful in producing a very large currant, of a very dark red, nearly a wine color, and of a delicious flavor. It is also a long keeper, remaining on the bushes for a great length of time, one of the best in this respect that I have ever seen, as it starts to ripen about the 12th of July, and I exhibited a box full of them at the Toronto Exhibition last September, and the Toronto *Globe* of the 2nd September referred to them as being one of the attractions that day.

The first that the public knew about this currant was in 1920, when I put it on exhibit at the Horticultural Show in Owen Sound, about the 20th August. This currant has very heavy foliage, and so far it has been free from milldew, rust or insects.

I have always given them the best of care, fertilizing them well. I do not know how they would do on poorly tilled soils.

The strawberry is one of our most delicious and most important fruits, as it is the first fruit of the spring, and it ripens at a time of the year when it is most appreciated. It is a delicious and wholesome fruit and has no superior. It is the delight of the amateur who indulges in its culture as a recreation, and also contributes very liberally to his pocket book.

The strawberry is a fruit that is grown largely in all the temperate zones of the world. In Canada it has become a large and important industry in various parts of the Dominion. There are large districts where they are by far the largest crop grown of all the small fruits. On this American Continent the

people relied almost exclusively upon the wild plant to supply their needs until about the year 1835, and until that time the strawberry had been considered a plant of the wilds.

The introduction of the Hovey's Seedling about this date marked the beginning of a line of cultivated varieties. Plants of this variety grew better and produced larger fruit than the wild ones did. and to-day we have a number of varieties cultivated and bred to suit almost every soil. In our locality we grow principally two varieties, the Senator Dunlap and the Williams, as they seem to do best on the sandy loam soil, although they are grown on clay soil also, but the crop does not seeem to hold up in hot weather nearly so well as it does on the lighter soils.

My method of growing is the matted row system. We set plants four feet by nine inches in the rows and I cultivate on the flat until there are a good number of runners. Then I start to mold the earth to them, that pushes the young plants in and covers them so that they take root and form a thick matted row with deep rooted plants. As we hoe we bring some of the earth in around the plants to fill up the middle of the rows and I keep doing this all through the season, cultivating them every ten or twelve days all summer and fall until about the second week of October, then I put on the double moldboard plough and ridge them up ready for winter, this leaves a furrow between each row to carry off any surplus water that may be there.

In the spring I draw the mulch or litter of the plants down into this furrow as this holds moisture in dry weather, and is a protection to the fruit from sand in rainy weather, and also gives a clean place for the pickers.

As to the preparation of the soil, I grow a hoed crop for two years and fertilize the land heavy. first with a crop of corn, then with a crop of tomatoes. In the fall after this crop is off I put on a heavy dressing of manure and plow it down late. This has a tendency to hold moisture in the land the following season.

In the spring as soon as it is dry on the surface, I put on about two ton of wood ashes to the acre, and disc it in, going over it every few days until it is time to plant, which varies as to season. I have planted as early as the 10th of May, and I think the early planting is the best at all times, as the plants get a good start before the weather grows too warm.

The demand for the strawberry is greater in this locality.

In 1909 I bought two baskets of currants supposed to be Red Cross, and they were a little damaged. My wife was making jelly out of them. She threw the damaged ones out on to a bed for planting pansies, and a strong seedling grew there against the wall. After a time it developed two branches. I cut them back, and put those branches into pots and they rooted. I did not know what it was until about three years ago. We had not time to pick a bush and we left it, and the fruit stayed on there and neither fell nor wilted, in August. That made me begin to think that there was something more in that currant than the ordinary ones, so last year I left them on the bushes, and by keeping them I got 20 cents a box for my currants when others sold for 10 cents.

I found there was no profit for us in our locality with currants so that I pulled up 200 bushes of black currants because we could not get pickers, and if we did we had to pay more to them than we got for the currants. I also pulled up

six red currants because they were of inferior quality and very small. It has only been three years at the outside that I thought it was worth bothering with this currant any more han any other.

H. SECORD: Are your currant bushes matured?

J. R. BERNEY: Three of them are.

H. SECORD: How many quarts to the bush do they yield?

J. R. BERNEY: I could not answer that question. There have been so few. You know that they are very heavily loaded, most of them, but I have not gone into details on what they would grow to the bush.

Strawberries.

PROFITABLE GROWING OF ONIONS, SEED, AND TRANSPLANTED.

Howard Rittenhouse, Beamsville

There are many men here who have had more experience than I have had in growing onions, although I have been growing them for six or eight years. Since taking a trip to the onion district of Ontario, the Leamington district, I feel very much of an amateur at the game, although I have had reasonably good success in growing a pickling onion. The programme perhaps, is just a little misleading in stating as my subject "Growing of Onion Seed and Transplanting." My experience has been entirely with pickling onions and any remarks I might make are entirely in regard to them. I have had very little experience with the large onions.

The best crop I had in two years, with the pickling onion, was something like 2,500 bushels from a 3-acre field, and the poorest result last year cut the crop down to about one-fifth. The labor part of it remained about the same or was a little higher, and you can figure for yourselves that the profit was not very great. I do not suppose there are so many people directly interested in the pickling onion, since they are grown more in localities where factories are located; but it would help me very greatly if those who are interested in the pickling onion would help out in the discussion. Perhaps we can all profit by questions that might be asked in connection with the growing or harvesting of the crop.

Q.—On what kind of soil do you grow your pickling onions?

H. RITTENHOUSE: Sandy loam.

Q.—How do you take the tops off?

H. RITTENHOUSE: That is where I have fallen down. I have pulled them and left them on the ground exposed to the sun to cure, which is surely a poor practice. This year we are building a lot of trays and expect to rack them in the field or under cover. The objection to sun curing is that if you get rain or a few showers they will discolor, and the factory does not want onions of that kind. They may be all right on the market. We have never had any complaint on account of being a little green for the market, but the factory certainly will not tolerate the green onion. We are situated perhaps a little better than a good many people who are growing green onions, being in the Niagara fruit belt, where 25 to 60 fruit cars are loaded each day. The onions are loaded in those cars and shipped all through the country, and we have a good outlet for the onions we can grow in that way. I have never found Toronto or Montreal a satisfactory market. I sowed 40 lbs. of seed to the acre. Your ground should be quite rich and able to produce the maximum crop. if you sow that quantity of seed.

Q.—How do you handle the soil to get it into proper condition as far as fertility is concerned?

H. RITTENHOUSE: We use manure 25 to 35 tons to the acre and supplement it with phosphate.

Q.—You don't use any potash?

H. RITTENHOUSE: No, I think the land would be in better condition for the sowing of seed if it was fall plowed.

G. H. POAD: Would the same methods used in the growing of other onions apply to the growing of pickling onions?

H. RITTENHOUSE: I should think so.

Q.—What seed do you use?

H. RITTENHOUSE: The Silverskin. For two years I got American grown seed; this year I have ordered imported seed.

Q.—What about Barletta?

H. RITTENHOUSE: I do not know anything about it.

Q.—What distance do you put your rows?

H. RITTENHOUSE: 12 inches, and we use a special opening plow on our seed to scatter the seed. We sow the rows 4 inches wide.

Q.—Are your rows 12 inches centre to centre?

H. RITTENHOUSE: I usually try to extend that a little, so that the knives have plenty of room to get through.

Q.—That would only give you 4 inches space.

H. RITTENHOUSE: Yes; of course you do not cultivate the latter part of the season very much.

W. S. EBORALL: Don't you think you could keep the weeds down better by keeping them a little farther apart?

H. RITTENHOUSE: About 14 inches would be ideal.

J. R. BERNEY: Did you ever try the onion weeder?

H. RITTENHOUSE: Last year I read an article by an American who rigged up a home made weeder, so I made one of wire. I used a two inch plank 8 inches wide and four feet long. No. 9 wire teeth, 8 inches long are placed every two inches in four alternate rows, teeth flattened at the end. Shafts are put on to

facilitate pulling the weeder. You use it just after sowing the seed in order to kill any weeds that have started to germinate. We think that would save a lot of weeding.

One trouble I had up to last year was to get the rows straight. The ground was not in good enough condition, and I overcame that by use of the Meaker Smoothing Harrow. I would not attempt to till an onion field again without it.

Q.—What depth do you sow your onion seed?

H. RITTENHOUSE: Quite shallow, about ½ inch. Previously I have waited until about the middle of June. After this I shall sow as early as I can get on the ground. I thought I was destroying and killing a lot of weed seed by tilling the ground until that time, but I believe I have just as many weeds and more than if I sow early.

W. S. EBORALL: There is a good deal in working land and never allowing the weeds to come up.

A MEMBER: Will you give us some idea of the method of harvesting them.

H. RITTENHOUSE: There are two good methods of curing. In Ohio, where they grow a lot of sets of pickling onions, they pull them in bunches and place the tops of one bunch over the bulbs of the previous bunch, placing them in the sun and let them remain that way for a week or ten days, until the tops are thoroughly dry. Then, on the morning of a day when you expect it is going to be very warm, uncover them, allowing the sun to dry out any moisture and rub them over a screen. And I have found that a good method, except that it must be a very hot day, otherwise it is hard to get the tops off. Another method I want to try out this year is to top them as you pull them. I understand in the Chicago district where there are a lot of onion sets grown, the women do this. About the time they are ready to pull they are very brittle just above the bulb and whatever is left will dry up without any trouble.

A MEMBER: Did you ever try an old fanning mill?

H. RITTENHOUSE: No.

THE SAME MEMBER: That is the best way to clean them.

A MEMBER: Under glass is the best way to cure them. If you cure them under glass about midday of a good warm day, and then run them through a fanning mill, you will not find it difficult.

H. RITTENHOUSE: Regarding trouble as to mixed sizes, our trade is largely a basket one, which goes into mixed cars, and I have never had any complaint from mixed sizes or overgreen onions.

A special attachment goes with the drill. It is the regular onion seed spreader. There are different attachments, 2-inch, 3-inch, and the largest is 4-inch. I use the largest one. It makes pretty hard pushing if the ground is not very fine.

A. H. MACLENNAN: Has your machine got a small wheel behind?

H. RITTENKOUSE: Yes.

A. H. MACLENNAN: I think possibly the difficulty in running your straight rows comes through the size of that wheel.

MR. RITTENHOUSE: I lay it to the fact of not having the ground in good enough condition.

A. H. MACLENNAN: When you are rolling it, if you will put a sort of a planker just in front of your roller, that would fill in the holes and you would find it much easier.

H. RITTENHOUSE: Rolling crosswise would help.

NEW METHODS DEVELOPED IN CONTROL OF INSECTS AND FUNGUS DISEASES

A. H. MacLennan, Vegetable Specialist, Toronto

The subject assigned me for this afternoon is one that is growing bigger and bigger every year. It is unfortunate that we have not had co-ordination in the various branches that have to do with this work. I am supposed to take remedies that have been tried out and found satisfactory and pass them on to you, and my difficulty is to find something that I can pass on and be sure of. Most of them I have had to work out with the grower. There has been a good deal of trouble with diseases and insects and how to get around them in a way that will be profitable to the grower is the standpoint from which I have always tried to work. I sometimes think that we do not pay enough attention to the insects and the diseases that attack our crops until it is too late, that if we would grow less crop and look after it better as regards the diseases and insects we would be much better off as far as our pockets are concerned at the end of the year. I know two neighbours with no fence between them; two years ago I treated both their cabbage patches for the root maggot. This year one man treated it and the other fellow did not. The one man got a full crop and the other got about 5 per cent.

During the past year conferences were held in each one of the vegetable districts; these were of one or two days duration. The subjects taken up were the diseases and insects affecting vegetables, the diseases of small fruits and the growing of vegetables and small fruits. The subjects were dealt with by men who were the best attainable for the subjects, and the conferences were largely attended in each district.

A series of lectures on vegetable growing were given to the Fourth Year at the Ontario Agricultural College; the Short Course in Vegetable Growing was arranged for and looked after. Assistance was given to Mr. R. S. Duncan in his Short Courses with the District Representatives.

Many letters were received and answered during the year; most of the correspondence sent to Guelph on vegetable growing being forwarded here for answer.

A number of requests were made for judges on vegetables. These in all cases were sent. Much of this work was done by the vegetable specialist personally, to show the exhibitors where they made mistakes in putting up exhibits.

The past year was not very satisfactory from the standpoint of the market gardener, owing to the effect of the exceedingly dry weather during the summertime. This was more noticeable in the east. However, prices held fairly well, and the growers came out considerably better financially than they at first thought.

A considerable amount of work was done this year on fertilizer testing. This is the third year that this work has been carried on, and while not as many experiments were made as in former years, the results were more satisfactory as the men who co-operated were all interested. The main object under consideration was to get the market gardener to examine more closely the ingredients of the fertilizers and study their availability and the effects on his various crops. Some very interesting results have been obtained in this work.

Cabbage root maggot work was carried on this year; during the past three years we have been extending this work among growers who formerly did not use it. The remedy which we have used for the past nine years (1oz. corrosive sub-

limate to 10 gals. water) has again given us full protection from this insect. There are still some growers in the Province who do not use it, but they are becoming fewer every year.

A certain amount of work was also done on the onion root maggot; for this we used the liquid trap bait made up as follows:—

1 oz. Sodium Arsenate,
½ gal. Molasses,
1 gal. Water.

This was spread around the patch in saucers; putting the saucers 30 feet apart each way. Rather an interesting result was that the only injury done in the patch was immediately around the saucers. More work will be done on this insect pest another year.

Control of Celery Blight and Celery Heart Rot was very successful this year. Work was done on it in at least one garden in every celery growing district in the Province. As the Tarnished Plant Bug is the cause of the Heart Rot in celery it was necessary to find a method of controlling both the bug and the late blight. We found that a dust mixture made up as follows:—

20% Bordeaux. (11%)	20% Sulphur.
30% Lime.	30% Tobacco Dust

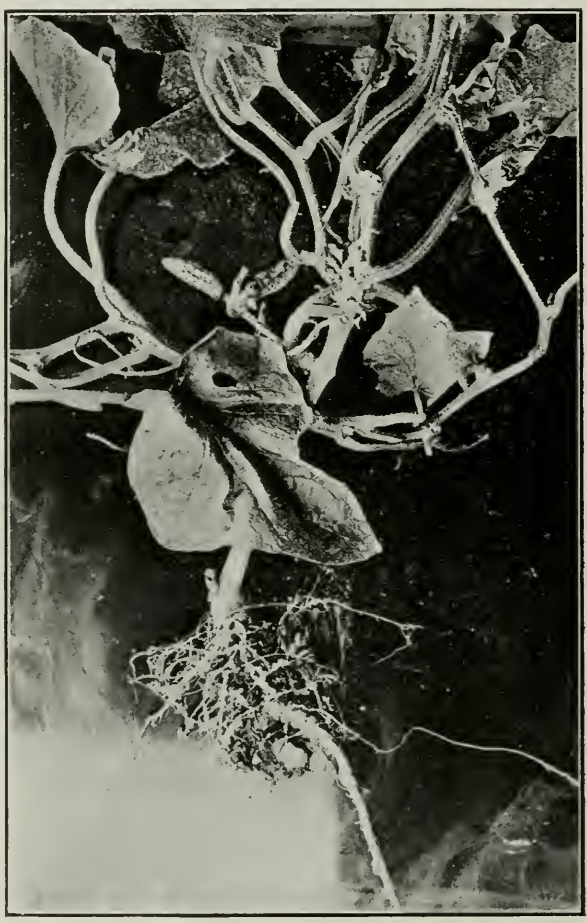
when blown thoroughly into the heart of the plant once each week from the time the plants were set in the field gave good control over both disease and insect pest this year. There has been a great amount of loss in celery from the Tarnished Plant Bug injury, especially after being placed in storage. For the past two years we have been using liquid to control both troubles, but could not find one which was satisfactory. We could always control the blight but not the Tarnished Plant Bug; in liquid form it is necessary to use Black Leaf "40," but apparently when this has been mixed with Bordeaux Mixture it does not remain effective long enough to keep away the female bug. The Tobacco Dust keeps its offensive odor much longer. This is the first year we have been able to control these troubles on celery in the London district and look forward to much more satisfactory work from now on.

Our greatest trouble in this work has been to find a machine which would do the work satisfactorily. We tried four makes of hand machine and also remodelled a power machine we had. All have faults but we are hoping to remedy them. Much valuable work has been done the past year. The power machine after re-building has proved quite satisfactory.

Tomato streak was prevalent in a number of greenhouses this year and we were able to control it. This disease is due entirely to excess watering and over feeding with nitrogenous fertilizers. The addition of phosphorus and potash in readily available forms and more care in watering and ventilation will control this trouble.

The potato seed inspection work was carried on as in other years. A number of changes were made by the Potato Council at its annual meeting on December 20, 1920. It required a fee of $1.00 for each entry and also limited the size of the field to one acre or over. These two requirements have worked quite satisfactorily in that they have brought out the men who were really interested in certified seed production. It looks as if we would soon be able to have all the seed potatoes grown in definite sections by men who were really interested in the work. This year certification work was done in Southern Ontario, and found to give us very satisfactory seed. Practically all of the Southern Ontario certified seed has

been sold; only one large quantity is held by the owner and he has been offered a number of chances to dispose of it but decided to hold. Three cars of potatoes were brought down from the North country but there is still a considerable amount up there, especially of the Green Mountain type; the difficulty of getting the stock from the North country owing to the sections being far apart, freight rates so high and also to the fact that most of these men held their prices away above market value until too late for shipment, has helped considerably to retard movement in these sections.



Nematodes on Cucumber Plant in Greenhouse.

This year the vegetable specialist did the judging on the potato work in the Field Crop Competitions carried on by the Agricultural Societies branch. Below is a summary of the work done.

Field Inspections for Certified Seed—167 applications Completed.

Field Inspections and Judging for Standing Field Crop Competitions. 50 Lists. 700 Fields. Completed.

Field Inspections and Judging for Combined Standing Field Crop Competitions. 4 Lists. 80 Fields. Completed.

Field Inspections in Ontario for Canadian Registered Seed Growers' Association. Registered Seed. Completed.

Second Field Inspections for Certified Seed. Completed all that was advisable.

Second Field Inspection including digging, weighing and judging for Standing Field Crop Competitions. Completed nearly all: we had to get judges from Mr. Wilson to finish four of these as our men had returned to College.

Second Field Inspection including digging, weighing and judging for Combined Standing Field Crop Competitions. Completed.

Tuber (bin and pit) inspection for certified seed. Completed, except one pit which could not be opened up on account of frost.

Car inspection for certified seed. Completed for this fall.

Tuber inspection (bin) and judging for Combined Standing Field Crop Competitions. 3 lists. 50 Inspections. Completed.

From the 167 applications received the quantity of seed which passed tuber inspection and was available for sale this fall was 35,000 bushels. Much of this seed has been disposed of at prices ranging from $2 to $3.50 per bag, f.o.b. point of loading, the most of it bringing $2.25. Most of the certified seed in Southern Ontario has been sold, but there were still several car lots of certified seed left in Northern Ontario when winter set in there, and stopped further shipments. One reason for this was that the growers there held out for a higher price than the buyers were willing to pay, and although the price was reduced toward the end of the season it was delayed too long to get orders through in time to ship before winter set in

Regarding our field inspection work on the Standing Field Crop Competition fields, one of the results looked for, namely, a large quantity of good seed free from diseases and foreign varieties, did not materialize, but on the other hand it showed the need for a fresh start in good seed in most localities. Many fields have three, four or more varieties of potatoes all mixed; others, varieties wrongly named, but in each competition there are one or two growers who have fairly good seed, and other growers in that locality would be well advised to purchase seed from them. One trouble is that seven prizes being awarded in each competition, many poor-looking fields with mixed varieties get prizes, and some of this seed may be sold locally as prize seed, though it will not improve the yield or purity of varieties in these districts. In previous years judges have been sent around just as the plants matured and were about ready to dig, and made up their scores more from clean cultivation and estimated yield than freedom from disease and purity of variety, and the majority of growers appear to be of the opinion that the digging and weighing part of the judging is about the most important part of the competition and must be done. As a matter of fact, the digging and weighing part of the judge's work is open to criticism, as the judge selects two places in each field to dig and weigh, estimating yield per acre from this; so he may select the two best, or the two poorest places, as he feels inclined, and so give a grower a high or low yield per acre.

The Combined Standing Field Crop Competitions are different as registered seed is required to start with. The idea is to raise a large quantity of high grade seed.

REPORT OF EXPERIMENTS AT BURLINGTON TO CONTROL CERTAIN INSECT PESTS CARRIED ON IN CONJUNCTION WITH PROFESSOR CAESAR

Cabbage Root Maggot.

The following are some of the more interesting facts obtained or proven during the year, in regard to cabbage maggot.

First, cabbage maggot adults begin to appear as a rule just about the time that sweet cherries are coming into bloom, and egg-laying has begun and a few eggs have been hatched by the time that European plums are just coming into full bloom or when native American plums are beginning to show first bloom. The flies of the first brood continue to emerge some seasons as long as to the end of August but usually to about the middle of July. There are clearly three broods a year and almost four, though it is very difficult, or almost impossible, to trace out the fourth brood. Flies of at least three broods may be present at the same time.

The shortest time from the emergence of the flies until they begin to lay eggs was, in cages slightly over four days, but from considerable evidence obtained it is probable that a much shorter period than this is required in the field, namely, about two days.

The largest number of eggs laid by any one fly in cages was 117. Flies may lay at the rate of almost thirty eggs a day for six days. The length of life of a fly is apparently somewhere between three or four weeks.

In our observations no fly was at any time seen to lay eggs where these would be exposed to the sunlight but only in the shade. This is an instinct to preserve the eggs from destruction by the sun's rays and by drought.

The shortest incubation period for the eggs was slightly under 48 hours, but the average time is probably about five days. Weather conditions determine to a considerable extent the length of a period. Under normal conditions nearly all eggs hatch inside of a week. Sunlight and dryness of the soil are two important factors in the destruction of eggs. In very dry soil, as high 90% of the eggs will sometimes fail to hatch. Shade and moisture are favourable for hatching.

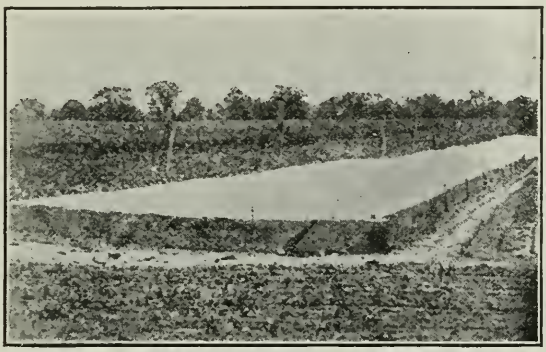
It is rather interesting to learn that some of the pupae (puparia) spend two winters in the soil before they come out thus making a two year life cycle instead of a yearly one.

The reason why late crops of cabbage and cauliflower are usually exempt from injury is because, after the warm weather has begun, say the end of June or the beginning of July, there is a great increase in predaceous insects and mites which attack both the eggs and larvae and thus protect the plants from injury. A second factor that helps is the destruction of so many eggs at this time of the year by drought and heat.

Prolonged wet, cold weather when the flies are emerging in spring lessens greatly the number of flies. For instance, in 1919 May was a very wet, cold month and only a little over 21% of the overwintering pupæ produced flies, compared with an average of 85% the other three years. Very hot weather, especially in July, seems also to have a marvellous effect upon pupae. Last July was exceptionally hot, especially the first half of it. and from the middle of the month to the end of the year there was scarcely a fly to be found, whereas any other year they were present in considerable numbers up to the first of October or later.

Control Measures: Corrosive sublimate has not only in Canada, but in every place where it has been used properly, proven itself an excellent substance to control this pest.

Number of Treatments: Cabbage and Cauliflower can be protected by one well-timed treatment most years but as weather conditions vary greatly it is wiser and safer to give two, both of which should be put on at the right time as indicated below. Some persons will prefer to use three applications and if they do not mind the extra expense this is all right.



Cabbage Seed-bed Screened with Cheese Cloth to Keep Out the Cabbage Maggot.

Length of Interval between Treatments: On the average, one week is about right. The time should not be longer than a week. A day less does, as a rule, no damage, and sometimes is even an improvement.

Strength of Corrosive Sublimate: If only one treatment is given use 1 to 1000, that is, 1 ounce to 6 or 6¼ gallons of water. For two or more treatments use 1 to 1,600, that is, 1 ounce to 10 gallons of water. This latter method is the one preferred. It does not pay to stint the mixture, the soil around each plant should be thoroughly saturated.

Time of the First Application: This is exceedingly important if we are only going to make two applications. Our experiments indicate strongly that the proper time for the first application corresponds almost exactly with the time when European plums are almost in full bloom or when American plums have just nicely begun to bloom, the American bloom being a few days later than the European. Hence if plants are not set out until European plums are in full bloom or American plums are beginning to bloom, or even later, the flies will be present and will have begun laying eggs and so the application should be made in this case four days after setting out the plants; but if they are set out early, quite a while before the trees are in bloom, wait until the European plums are just about in full bloom or the American plums are beginning to bloom and then apply. Many eggs will be laid by this time and a few of them will be hatching, thus the corrosive sublimate will get the best opportunity to give good results. The second application, of course, is seven days after the first. Another good plan to follow is to show the growers the eggs and then let them watch for these and the second or third day after finding them begin treatment. If growers want the best results and do not mind using three applications they can put the first one on four days after the plants are set out, and then the other two at intervals of a week. This, however, is not a logical method but a wasteful one.

For Radishes and Seed-beds of Cabbage and Cauliflower: We have found that two treatments will give excellent results. The first of these should be in three, or certainly not more than four, days after egg-laying begins (it is better to wait only three days). If the plants are up before bloom of plums wait as mentioned above until the European plums are almost in full bloom and then make the first application. The second one should be made five days, or not more than six days, later. A week is usually too long for radishes or for the seedlings of cabbage or cauliflower. If the radishes or the seedbeds are sown and come up after European plums are in bloom make the first treatment on the fourth day after the first plants appear above the soil and then the second five or six days later.

How Corrosive Sublimate Kills: It does this in three ways, First, it destroys all, or nearly all, of the eggs in contact with moist treated soil. Second, it kills many of the smaller larvae and some of the larger. Third, it repels larvae and thus by warding them off from the plant causes them to perish from lack of food. Larvae once buried inside root tissues are usually uninjured by this substance. Corrosive sublimate does not deter flies from laying their eggs around the plants.

Onion Maggots There were two plots treated for onion maggot this year. In one, multipliers and Dutch Sets were placed in the soil at the same time as the sowing of the seed, to act as traps for the adults. It has been claimed in British Columbia that this is a perfect method of controlling the maggot. The other plot was treated with sweetened poison set in dishes, 25 feet apart. These dishes were kept supplied as often as necessary with the sweetened liquid. Neither plot was badly attacked but owing to the difficulty of securing absolutely satisfactory check plots it was very hard to determine whether the small number of injured onions was due solely to the poison bait in the one case or to the trap onions in the other. Many further experiments will be necessary to get absolute proof of the value of the poison bait. There is a great difference of opinion among entomologists today on this point and also considerable doubt as to the value of the trap crop. These experiments, however, will be continued.

FERTILIZER EXPERIMENTS, 1921

Tomatoes. Special, ⅛ acre. 100 lbs.

Comparison of two sources of Phosphorous. Nitrogen sources the same in each case.

Harper Secord, St. Catharines. 6 days earlier. 20% more yield. 10% profit on Phosphate Flour. 3 days earlier. 10% more yield. 5% profit on Acid Phosphate.

L. C. Gray, St. Catharines. Fertilized 10 baskets extra. $1.50 per basket. 20% better. Phosphate Flour best.

Frank O. Reeves, Burnhamthorpe. Five experiments; two lots of 4-10 of special ingredients, one plot with 5-12 commercial, 1 plot no manure, 1 plot 15 tons manure per acre. Special lots gave three weeks earlier ripening and ⅓ more profit. No manure gave very poor results. Manure gave a fair crop but very late.

The special fertilizer had the Nitrogen in the form of Nitrate of Soda and Blood; in each case phosphorus was in two different forms but there was little

apparent difference in that regard. This experiment again indicates the necessity of having the nitrogen for tomatoes in a very quickly available form in the first five weeks.

E. J. Atkin, Leamington. Here again the quickly available nitrogen shows to advantage. Potash was shown not to be necessary for tomatoes.

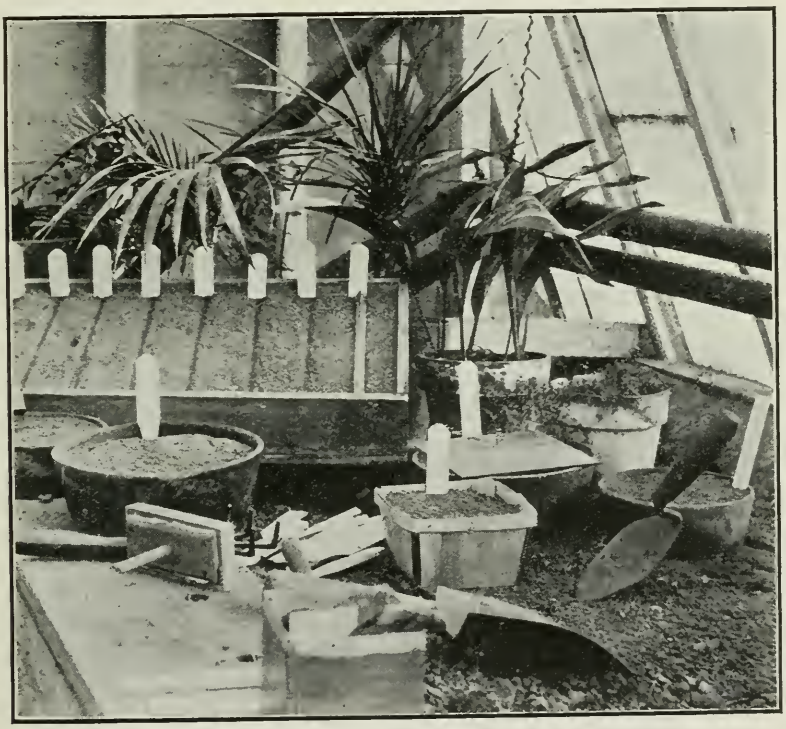
Tomatoes. 1/8 acre. 5-12 Commercial Fertilizer. 100 lbs.

F. Phenix, Highgate. 400 bush. at 40c. per bush. off fertilized. 234 bush. at 40c. per bush. off unfertilized.

J. R. Cowan, Ottawa. 3200 lbs. off fertilized. 2400 lbs. off unfertilized. $25.00 profit.

C. W. Dempsey, Stratford. 175 baskets off fertilized. 147 baskets off unfertilized. 60c. per basket for all.

W. M. Grant, Blenheim. 10 days earlier. 10% more fruit. $3.75 per basket.



Sowing Seeds.

C. Quanbury, Simcoe. Fertilized 5 days earlier. $6.00 extra for early. 30 bush. off fertilized. 24 bush. off unfertilized.

C. F. Kitney, Peterboro. Fertilized 8 days earlier. $12.00 extra for early. 75 bask. extra.

J. R. Spry, Whitby. 50 bush. extra off fertilized. 10 days earlier.

Melons. 1/8 acre. 5-10. 100 lbs.

G. W. Bycroft, London. More ammonia needed. Blight and Wilt. 5-10 days earlier; each three plots the same. 5 crates at $2.00 per crate. Market killed by Aldershot early melons.

F. L. Furminger, St. Catharines. 10-12 days earlier. 20 crates off fertilized; 15 crates off unfertilized. $2.00 per crate.

Celery. 1/8 acre. 100 lbs.

P. A. Bell, Humber Bay. 4-8-6 fertilizer. Increase 25% on fertilized. Sold at 25c. a dozen more.

Leo. Martin, Vineland. 4-8-4. 80% of No. 1 plot sold at 90c. dozen; 70% of No. 2 plot sold at 70c. dozen. Used his own 4-8-6. Unfertilized unsaleable; has no manure.

W. McMeans, Brantford. 4-8-4. 15% increase on fertilized. 75c. per dozen.

I. A. Farquharson, Aylmer. 4-8-4. Fertilized; 65 doz. at $1.25. Unfertilized; 60 doz. at $1.00.

Potatoes 1/8 acre. 4-8-4. 100 lbs.

F. C. Gard, London. Fertilized, 30 bush.; unfertilized, 20 bush.; price $2.25.

John McNally, Sarnia. Fertilized row 35 rods long yielded 4 bushels. $2.00 per bushel. Unfertilized row 36 rods long yielded 2 bushels.

Potatoes. Special. 1/8 acre. 100 lbs.

Comparison of manure, 15 tons to the acre; complete commercial 4-10-4 fertilizer; and one without potash, 4-10.

H. Broughton, Sarnia. 4-10-4, 320 lbs. potatoes; 4-10, 287 lbs. potatoes; manure, 135 lbs. potatoes; $3.00 per bag. 1 row, 26 rods long, 4-10-4, $3.66; 1 row 26 rods long, manure, $1.50.

Cabbage. 1/8 acre. 5-12. 100 lbs.

F. C. Gard, London. Fertilized, 40 dozen; unfertilized, 30 dozen. $1.25 per dozen.

Green Crops for Manuring.

Frank O. Reeves, Burnhamthorpe. A test was also made of green manure against stable manure. The green manure was 1/3 peas and 2/3 oats, mixed and sown at the rate of 10 pecks per acre in August after a crop of early potatoes. Beside it an application of 15 tons of manure per acre was applied. Crops of beets, carrots and corn were then planted across both sections. No difference was found. The green manure cost just the price of one ton of manure. This result is very interesting. Beets returned 21 bush. and carrots 15 bush. to the 600 feet row.

Our experimental work has shown that while fertilizers will give results where properly handled, the composition is the part that will give trouble. Especially is it necessary to make up the nitrogen content in different forms for different crops. It has been clearly shown in the past three years that for early tomatoes either Nitrate of Soda or Sulphate of Ammonia should be used with Blood in order to give very early ripening. Phosphorous should also be readily available. Potash apparently is not necessary. A 5-12 formula made up as stated seems most satisfactory.

As you all know, there has been a new farm bought at Ridgetown; in the best section suited to your work. It would seem to me that it is up to you to see that the vegetable experimental work you want is done there. Help them with real suggestions. It has got every type of soil you can desire—some of the finest celery and onion land. The western section of Ontario is the ideal section of the province for gardening work—in fact, it is the ideal section of the Dominion of Canada. There is no better place to get your problems worked out.

J. R. BERNEY: Is it possible to grow good celery in muck land about 4 feet deep?

A. H. MACLENNAN: The celery crop will depend largely on one thing, and that is the moisture content of your soil.

J. R. BERNEY: It is a clay bottom.

A. H. MACLENNAN: Does your muck land dry out very slowly?

J. R. BERNEY: There are about 1,800 acres of it, and a ditch was put through years ago. I have been wondering if it will not dry out too much for celery?

A. H. MACLENNAN: It will depend on one thing, and that is the effect that treatment has on the water table in your soil. I know of a case in Uxbridge. There is a piece of muck land up there that has been drained too deeply. If you go to the good celery lands at Thedford, I doubt if you can dig more than 18 inches or 2 feet before getting water.

MR. CHRISTIE: Under ordinary conditions you would not have to go much lower than that.

A. H. MACLENNAN: Celery is a heavy water user, and that is the point in the whole thing. The depth of the muck itself did not affect the celery; it was the depth of the water table below the surface.

MR. GRANT: I would like to ask Mr. MacLennan if he thinks it would be in the interest of the Vegetable Growers to have the Government establish a Cold Storage in connection with the holding over of vegetables.

A. H. MACLENNAN: In the Cold Storage plant at Brighton this past year we have been doing considerable of that work. If we can do it satisfactorily there, you would not want it at Ridgetown, although it would not do any harm if you could get it there. There is a big future in holding over vegetables.

That brings up one point that I found this fall in working in the Thedford section where there is a very large acreage of celery. They have been bringing it down here to Toronto for storage. Last fall I went especially to a little town called Williamson in New York State to see the method they use in keeping their celery. They put in a good many thousand crates of celery in storage there, and as soon as they put it in the crate in the field they draw it immediately to storage. They drop the temperature to 29 degrees for six hours, then raise it to 32, where they hold it indefinitely. We have tried that at Brighton.

MR. GRANT: Have you done anything in Brighton in the way of carrying over of seed potatoes?

A. H. MACLENNAN: We have had two carloads of seed potatoes here in Toronto and we have carried them over for three years with only about 1½% of loss—that is under ordinary storage conditions.

MR. GRANT: Ordinary storage conditions on the farm are not very satisfactory.

A. H. MACLENNAN: The great trouble, of course, is to keep them just as close to freezing as possible and keep as much air moving through them as possible, so as not to allow any moisture to gather. In Michigan, where they do a good deal of storage of potatoes, their storage houses are made largely of walls of 2 x 4's boarded on the outside, papered and boarded on the inside. Then they pile the potatoes three feet away from the wall, all the way around, and when it comes very cold they keep a stove in there. That has been found the most satisfactory way of storing.

It was moved by Mr. Reeves, seconded by Mr. Eborall: "That the Executive take whatever steps are necessary to meet the Minister and see that the Vegetable Growers' interests are protected at the Ridgetown farm." Carried.

A NATIONAL HORTICULTURAL COUNCIL

Leslie Burrows, Ottawa

At the Third Dominion Conference of fruit growers, held in Ottawa in 1912, a committee composed of representatives of each Provincial Fruit Growers' Association was appointed to consider the question of the formation of a National Fruit Growers' Association. The committee, after due consideration, submitted a report recommending the organization of a National Body to be called "The Canadian National Fruit Growers' Association." They also submitted a constitution and by-laws. The report was adopted by the Conference and the Fruit Division, then a part of the Dairy and Cold Storage Branch, was requested to elect by correspondence ballot, the provisional officers. The late Mr. Robert Thompson, of St. Catharines, was elected President and Mr. P. W. Hodgetts, Secretary of the Ontario Fruit Growers' Asssociation, was elected Secretary.

I am not aware that the Provisional Board held more than one meeting. Two years later (1914) another conference of the fruit growers of Canada was held, and in looking over the reports of the proceedings of that Conference we cannot find that any reference was made of the question of a National Organization. However, we have been advised that it was generally felt that as the Fruit Division had been raised to the status of a Branch and would devote its whole attention to fruit, there was very little need for a National Organization. Ten years have elapsed since the question was first considered, and many changes have taken place in the Horticultural world during that time. To-day we find that the horticultural industry is the only branch of agriculture that is not represented by a national organization. It is true that we have Provincial Fruit Growers' Associations and other organizations which have done and are still doing excellent work for their industry in their respective Provinces. There is, however, no co-ordination of the work of the various organizations within the Province nor of the Provincial Associations in the Dominion.

The fact that other branches of agriculture have organized into national organizations is not sufficient reason why those engaged in horticultural production and the allied industries should also organize, but it has been suggested that there are many advantages to be secured by the formation of a national organization and that the present is a very opportune time to consider the whole matter. Therefore, it has been arranged that the question shall be discussed at the coming Dominion Fruit Conference, which is to be held in Ottawa on February 22nd, 23rd and 24th next.

When the matter was discussed in 1912 there was no thought of including in a national organization, any but fruit growers, but it is now proposed that the National Body shall include, in addition to fruit growers, representatives of producers of various horticultural products. such as potatoes and other vegetables, flowers and nursery stock, manufacturers of fruit, flower and vegetable containers, wholesale dealers in horticultural products, and fruit and vegetable canners, all of these being more or less interdependent.

In order to facilitate discussion it was suggested that the Fruit Branch outline some of the objects which such an organization might attain, and also prepare a draft of a constitution and by-laws. This has been done and the constitution and by-laws of the National Dairy Council were used as a guide. The object of all such organizations is to get the advantages which come from combination, such as:

(*a*) To speak with one voice for all,
(*b*) To speak with one will for all,
(*c*) In speaking and acting to have the authority conferred by the concensus of numbers,
(*d*) To use for the benefit of a common cause, concentrated funds collected from many.

Tomato root from Greenhouse affected by Nematodes.

The main object of this organization would be the advancement of all matters tending towards the improvement of the Horticultural industry in Canada. including production, grading, packing, transportation, storage, marketing, etc.

(a) By initiating, fostering and assisting in obtaining such legislation and regulations as will be beneficial to the horticultural industry.
(*b*) By encouraging the holding of horticultural displays, the distribution of literature and by systematic advertising, informing the general public as to the value and general use of horticultural products.
(*c*) By encouraging the adoption of uniform standards of grading and packing and assisting in developing home and foreign markets.

Time will not permit of taking up the various clauses in the tentative constitution or the by-laws set forth in the draft but. at any rate, if the principle meets with approval there will, no doubt, be many changes made. This draft has been submitted to several Provincial Associations and those who are actively engaged in scientific and commercial horticultural activities, and practically all have expressed their approval of the formation of a National Body representative of the industry in its broadest sense. They feel that the present is a very opportune time

to consider the whole matter. If it is the wish of this convention to discuss the matter, I shall be glad to explain some of the principal points in connection with the tentative constitution and by-laws.

It has been pointed out by some that the policy of the Fruit Branch of the Dominion Department of Agriculture in holding Dominion Conferences, from time to time, and the service which has been established by the Dominion Fruit Branch have so far fully met the requirements of the industry. However, it would appear that a National Organization might offer some advantages over our past methods, by reason of the fact that it would permit a complete independence from all Government Bodies or Institutions, thereby giving a larger feeling of freedom of speech and action.

The Provincial Fruit and Vegetable Growers' Associations have been very generous in giving their support to the Fruit Branch, which has been very much appreciated, but it is generally recognized that weight of numbers having a unanimous opinion gives a larger possibility of success when dealing with questions of importance to the industry. Matters of policy and procedure requiring urgent attention and action could be speedily dealt with. A National Body may also permit of the horticultural industry taking its place on an equal footing with other agricultural industries having national organizations. Occasions may also arise where the combined efforts of all national organizations may be effective in obtaining for agriculture better conditions.

If the general principle for the formation of such organization meets with the approval of this Association it is suggested that a small committee be appointed to further inquire into this matter and be ready when or if called upon to discuss it with the representatives of other organizations.

In the discussion of the question of tariffs. both duties and transportation tariffs here mentioned as affecting the Vegetable industries, a committee from this Association, from the Provincial Fruit Growers' Association, or any other Provincial Association approaching such a body as the Dominion Railway Commissioners could not hope to attain the success which representives of a body such as the Canadian Horticultural Council, composed probably of 10,000 members, could count on attaining.

It was not intended to adopt the constitution mentioned. The representation which was allowed in this constitution was merely something that was put down as instancing it, as this would have to be discussed before being decided on. Also on the question of financing: this was probably one of the largest questions that would come before any Council, should it be the wish to eventually form such a Council. As a permanent basis for a working organization, such a Council should have a permanent office and a permanent secretary who can keep in touch and keep the purposes of the industry not only before the public, but guard its interests before Governments and the Railway Commission.

There are certain limitations to which a transportation man, who is in the employ of the Dominion Government, can go in bringing transportation to the Transportation Committee of the Board of Railway Commissioners. The same applies when discussing tariffs affecting fruits or vegetables coming into the country or duties to be applied. It appears that there would be greater freedom of action if the Fruit Growers and Horticultural interests were represented independently of the Government.

At the present time, if there is a matter such as we had last fall in the British Empire Fruit Show, it had to be referred to a large number of individual

bodies before we could take the required action or give a definite answer as to the participation of the Dominion Government in such a show.

It is not the intention of the Fruit Branch, in bringing this matter forward, that it should be adopted. It is entirely a matter for discussion. The Fruit Branch has brought it forward entirely in that light. They take an absolutely neutral stand, believing that if the Fruit Growers, the Vegetable growers, the Nurserymen and other Horticultural Interests want such a thing, they will form it themselves. However, the Fruit Branch is willing to follow the matter along and father it to the extent that if the Horticultural interests decide they want it, they will go part of the way towards paying the original or the first organizing expenses. If you feel that the principle meets with your approval I would suggest that a Committee be appointed to go into this matter and be ready if, or when, called upon by the representatives of the other organizations to discuss the matter and eventually put it over.

J. Lockie Wilson thereupon moved: "That we approve of the principle of a big Horticultural Council and the matter be referred to the Executive."

After being duly seconded the motion was put to the meeting and carried.

SUCCESSFUL GREENHOUSE VEGETABLE GROWING

C. Fretz, Vineland Station

The main crops are tomatoes, cucumbers, lettuce and radishes, divided as follows:

1. Location and soil.
2. Kind of house to build.
3. Kind of vegetables to grow.
4. On raised benches or on the level.

Kind of Soil: The best soil is a sandy loam quite light for lettuce and radishes, and possibly it would be better a little heavier for tomatoes and cucumbers. I do not mean clay soil, as this is apt to bake when you apply water to it, and it has not the drainage that sandy soil has. In short, any soil that will grow a good garden crop and is easy to work will do, and should be high enough so that you are sure that the surface water will drain away from it in the spring. Often we see that someone will build a greenhouse down in a low place to be close to the water. In spring the high water backs up and I have known it to drown out the entire crop and if it does not do this it has a tendency to keep the water in the ground and make a cold bottom. Such a place should be rejected.

Location: This is an important point, so often we see good houses built where there is no room for expansion. This is a mistake as they must either be torn down to be moved, or, if a man desires to expand, he will have to divide his plant and erect it in two places, which is not desirable. It should be close to a railroad so that you can have a siding and better still, if it is close to a station for shipping out your produce, providing you are some distance from the market. Do not forget you must have a never failing water supply, as this is the one most essential point. If possible, a good wind break is economical, but this can come afterwards while there are other things that cannot be brought to it so easily. Most of the greenhouses have been built close around the cities. Now this is very convenient for marketing your produce and also for water supply. This may be an advantage in some respects but do not forget that water rates are high and as

a rule you do not get as good labor as you do farther from the city, and with our improved roads and trucks this is not as serious a proposition as it was a few years ago. Then, if a man can be fortunate enough to be between two cities he has the choice of two places to market his produce, which may often be a decided advantage to him.

Kind of House to Build: This is a matter for the grower to decide himself. Personally I think the iron frame house, fifty or sixty feet wide with seven foot posts and good up-to-date ventilators is the most economical house to build. Taking all things into consideration the best is none too good.

Kinds of Vegetables to Grow: We aim to have one crop of tomatoes for Christmas in three houses, and one house for cucumbers, as there is a good demand for these at that time. Then we follow up with lettuce for a fill-in crop,

Cauliflower Plant in Seed.

then again tomatoes and cucumbers for a spring crop, making three crops during the winter season, sowing our tomato seed for the fall crop from the 15th to the 20th of June. These are ready to prick out in thumb pots in about two weeks and about three weeks later transplant to four inch pots and plant in the houses about August 10th or 15th. These should be ready to start picking about the middle of November. For the spring crop, we sow the seeds about the 10th of September and handle them in the same way as we do for the Christmas crop. This leaves us practically a little over two months for our lettuce crop. We sow our seed for the lettuce crop about the first or second week in November, then

these plants are ready to be set out in the beds about the first or second week in January. If planted early in the fall or in the spring they should be ready sooner. You must always figure on November and December being your shortest days and our cloudy months as we call them, therefore it takes longer to grow plants in those months.

Benches or Level Bed: We have been growing all our crops on the level ground, though the benches are much more handy to work on, and, possibly, will warm up better with the heat in under them; but I think there can be heavier crops grown on the ground than on benches, for there is not so much waste room and you have not the expense of putting in benches. If you should decide later on to grow flowers you could put in the benches afterward with no more expense.

Cucumbers: Cucumbers, in my experience are the most difficult crop to grow, as they need a much higher temperature and are subject to more disease; and, unless you have the self-pollenizing kinds you will have to use bees, and this may be a difficult matter as no doubt most of us have not had experience in handling bees in a greenhouse. Nevertheless, cucumbers are grown on a large scale by our friends across the border, who ship them into our market and get fancy prices; possibly they have a little more sunshine than we have which cucumbers particularly delight in. No doubt the new cucumber originated at the Experimental Farm will solve the problem of pollenation.

Radishes: I have left radishes for the last and I think there can be so little said on growing radishes and so little made out of them that I would only consider radishes where I would be caught without plants to fill up my houses and would not like to let the fire go out. They might pay the coal bill and that is about all.

Summary: The greenhouse business is one that dare not be neglected, as, like many other things, it is the little details that count for gain and loss. You cannot do to-morrow's work to-day, and then not go near it for two days, and you cannot do to-day's work to-morrow. Remember the sun does not shine every day, and you must regulate your fires and ventilators accordingly. Great care should be exercised along this line. Just put on a fire and go away for a day and let the sun come out without ventilation; or on the other hand open the ventilators in the morning and if the wind should turn so as to drive in from that side you will soon see the results. Keep close watch on your watering. Work your ground well, and use the same judgment as you would in your outdoor crop, only remember that you have a large part to do inside that nature does outside. Practically everything is in your hands except the sunshine, and the more of this you get the better profit you will reap. You have a lot of money at stake in the greenhouse business. You cannot afford to leave it all to another to plan and arrange, though he may be able to do the work and is always on the job or should be. These are some of the essential points for successful greenhouse growing.

Control of Common Insect Pests: For white fly on tomatoes we use per 4,000 cubic feet of space: 1 oz. Cyanide of Potassium, 2 oz. Sulphuric acid, 4 oz. Water.

Or for a house 41 ft. by 125 ft. we use 6 oz. of Cyanide, and the acid and water in the same ratio as above, and leave the house closed all night.

For the Aphis or Green Fly on lettuce we use: Tobacco smoke from tobacco refuse, making sure that the material is damp enough so that it does not blaze.

For the Spider Mite on cucumbers we spray the foliage with water under pressure, and try to prevent the house temperature from going too high.

We have never noticed any Nematode injury on any of our crops.

Q.—In radishes, did you ever try using only the large seed, taking out the small.

C. Fretz: No, if anyone has figured up the time to grow radishes and his overhead, I think he will be pretty well satified not to sort radish seed.

Mr. Lucas: We get our Globe radish seed from our local store and I sift it through a No. 21 mesh wire, and we have perhaps an ounce of seed to throw away out of a pound, and when we clean the bed off our waste is very small and we figure that the radishes make us just as much money as the lettuce. We have only used one pound of seed, and have sown 10 lbs. during the season—from the middle of September to the first of January. We tried the seed that we threw out as well and tested that. Some did not come up and the rest came out as tops and culls.

The Chairman said the radish which Mr. Lucas grows is the "Conical."

C. Fretz: If you sow them a little too thin you do not get much of a crop; if a little too thick you have not got anything worth while. If you figure your house space, etc., I am afraid you would not have much return for the glass, at 60 to 75 cents a dozen bunches. Possibly some of us got spoilt a little growing tomatoes during the war. But the point I wanted to make in the beginning is this, that if a man expends the amount of money that he has to, to cover ground with glass, and if he wants to pay for it in a given time, which I think he should do before it is going back down again, he wants to get it quick and my aim in the fields and all over, is to grow something that others have not got. It is easy to sell.

Mr. Lucas: We use the Eureka seedling.

Mr. Fretz: If you were sowing radishes how would you regulate your crop? We always figure like this: we start in August our tomato plants, and plant up the house in the fall; while the tomato crop is coming off we are growing our lettuce plants. As quickly as the tomatoes are all picked, our lettuce is ready to go into the house. We figure on having something growing in our houses all the time. As soon as the lettuce is off, our tomato plants are ready to fill in again.

Mr. Lucas: My ground is not empty one day. If I take my radish off, the ground is dug that same night, then sowed and raked and when this crop is finished another crop of radish or lettuce put in again.

C. Fretz: I have a green house 51′ 9″ x 125 of the Lord & Burnham type, which holds 12,000 lettuce, and I get a good revenue from that. I have sowed my other house in radishes, and I could not see any money in it. I figure a crop of tomatoes is worth at the least calculation three crops of lettuce. If you get two crops of tomatoes and one crop of lettuce, you make as much as from five or six crops of radishes. We plant our tomatoes close, a good deal closer than across the border and also a good deal closer than Ivey's plant them. We plant our tomatoes 14 x 22 inches and stake them up, or in other words a house 51′ 9″ x 125 takes 2,300 tomato plants.

F. F. Reeves: How much do you figure each plant should grow you?

C. Fretz: I sold my Christmas crop at 35 cents a pound for 1's and 2's, that is $5 a basket. The fall crop of tomatoes will not give you any more than about half as much as a spring crop, and a spring crop is about 6 lbs. to the plant. If you get from 2 to 3 lbs. to a plant for your Christmas crop you are getting good returns—that is with close planting. If you plant 2 or 3 feet you will certainly get a good deal more tomatoes on one plant.

My contention is this: your first, second, and third trusses are your money makers. I am changing a little this year, because I don't think we will get the high price that we used to get other years on account of the bad times in the cities. During the war, to show you who ate the tomatoes, a laboring man and his wife walked along the street with a baby carriage. They saw tomatoes inside a window at 75 cents a pound, and she said to him: "Let's take home a pound of tomatoes." He said: "We can't afford tomatoes at 75 cents a pound." Well she insisted, and you know how women get pretty nearly everything they want, and he went back and bought a pound of tomatoes. Well the working man consumed the tomatoes to a large extent at the high price. When you are getting 35 cents a pound you come out all right, but when your crop will average you 45 and 50 cents a pound there is a great difference. This house of mine of 125 x 51′ 9″ has given us a spring crop of 900 baskets of tomatoes. Last spring it

Cabbages grown in young orchard.

did not do quite so well. We had the fall crop, the lettuce crop and the spring crop. If you can keep on growing radishes, all right, but if I had to grow all lettuce or all radishes, I would not put up a pane of glass. We have a house now planted with cucumbers about 2 ft. high. We have that self-pollenizing cucumber in it, and we are going to use the bees in the house. We lost about 100 or 150 baskets of cucumbers through not having the bees in the house quite quick enough, then I went to the local place and bought bees that were rejected—good heavy colonies and I have them ready for my spring crop, and our cucumbers sold on the Toronto market, 18 cucumbers for $6 a basket. Mr. Ash sold them. Mr. Davis is shipping them in here now at $3 a dozen from across the border, and I don't see why the people have been so backward in building glass. That is in opposition to myself, I suppose, but if you will follow up statistics you will find out that Welland has increased its population 10,000 in ten years, and you will find along the high way to Toronto, that it is filling in very rapidly and greenhouses are not following. I have been after the manager of the L. & B. Company time and again to see if I cannot get more houses. There is a factory at St. Catharines, which can turn out at least one house a week. You cannot blame them, because the people won't buy. They are afraid of this $50,000 or $60,000 per acre proposition. If I were selling a greenhouse I would pick out

a man to sell it to who was making a success out of doors. If you will give the people vegetables the year around they will eat them, and you will encourage them to eat them. If you are going to let the lettuce, cucumbers and southern tomatoes come in here and not try to supply you own market, why you are not awake.

In marketing, I have two trucks and sell everything direct. There is one man in Hamilton who handles almost my entire crop—Wm. Carroll, with his chain of 35 stores will take everything I can grow.

A MEMBER: In 1912 and 1913 greenhouse tomatoes sold at 20c. a pound wholesale.

C. FRETZ: In 1912 and 1913 I took my first tomatoes to St. Catharines and I could not sell them. They said: "We have Southern tomatoes. We do not want yours"; and the Italian who is handling my stuff now—when I met him on the street, asked me to go and unload them at the store, and his wife nearly ordered me off the place. Inside of a week he ordered more at 15c. higher than the price of Southern tomatoes.

A MEMBER: What variety of tomatoes do you grow?

C. FRETZ: Over on the other side, Mr. West at Irondiquit, is one man who grows the heaviest crops of tomatoes. He grows a large kind. I saw 15 pounds on one vine. But they were too rough. Now Hamilton wants a rather small tomato. If a woman goes into a store and only gets one or two tomatoes, you know how she feels; if she gets five or six she is satisfied. People are now buying tomatoes, instead of beef steak, and anyone who has watched the increase in the demand for canned tomatoes and tomatoes in every way has seen a bigger increase in demand of that vegetable than in anything else that is grown. You know when we called them "love apples", and they would not touch them.

Coming back to the question of variety, the Sunrise is the tomato that was put on the Hamilton market by Mr. Nairn and the people took to them, but they were just a little too small to be profitable. Now the Grand Rapids is a little larger tomato, is a freer setter, particularly for fall. We have grown the Bonny Best, John Baer, and a lot of different varieties, but we have a variety of tomato now called "Veals" coming from Scotland. It is quite a little larger than the Grand Rapids, is a firm tomato, nice and smooth, it has given us good crops, only it is not quite so free a setter as the Grand Rapids. We will grow the Grand Rapids for the fall crop when there is less sunshine, and the Veals for the spring crop.

About pollenizing: There are a lot of things in connection with this that I have learned through experience, and they all cost me money. One is in connection with using cyanide in the house. We first carried the pollen from one room to the other with the "rabbit tail", and it seemed like a slow job. Then someone came along and said: "All you have to do is to tap the vine." Mr. Davis, of London recommended a spoon and going around each one. My man got the inspiration of tapping the vine last year, and I think we lost about 100 baskets of tomatoes through that and we are ready to go back to the slow way again. I like to be pretty sure of my ground if I do anything. If just a little more work is going to make it a little bit surer, I like to have it done. It means a great deal. Every bloom you lose on your first three and four trusses, means a tomato less, and they can just as well grow there as not. We do not care about the top of the vines. That does not make much difference to us, because later on, particularly in the spring off the year, the price goes down and the field tomatoes

come in, but in the first three and four trusses in the bottom do your pollenizing right. Take a sunshiny day when it is nice and bright, at noon. Do it every day because today there may be a bloom that is just right to catch and tomorrow it may be too late. My man is there, and he may just as well do it, and do it right; and if one man can't do it, I put another one on.

In connection with fertilizing: I have been around to nearly all the greenhouses in the district, and I have watched them carefully. I know a house a man has built, and he needed to make money out of his house pretty quick, and he has lost at least four crops. Then he thought last fall he would make sure of getting a crop of radishes, and he put a carload of pig manure into a house 30′ long x 100′. He did not get any thing. I defy any one to find a woman who is making a garden who would make a mistake like that.

Livingston Globe Tomato.

I know another greenhouse built last fall 100′ x 30′, it was awfully hard for him to finance it, and put his glass in. That greenhouse is full of twitch grass, and instead of taking the fork and shaking that thing up and levelling his house, the owner planted his tomato crop, and let the wind chase right through until the last of November then he had to take that crop out and put a lettuce crop in.

People will build greenhouses and will not use any judgment at all as to what they should do before they start them. All but the last one of my greenhouses have been built on soil that was used for hot beds one or two years before. Now most of you know what is under the ground where you have had a hot bed for

two or three years. Fortunately I would have my hot beds alongside of the greenhouse, and when I took a notion to build a greenhouse there, I just took all the manure and spaded it under. When the greenhouse was built there, if you spade over some more, then we come along with a little fertilizer, but we are going carefully with fertilizing. I think a green house is the place where the sun saps the humus and you must have manure to get it back again, and as you have to pay such a high price to put the glass over, it is up to you to make the very best and quickest use of it you can. I build a house and have it finished in October if I can, and in eight months from that I have three crops out of it. Don't you think that is good business?

REPORT OF POTATO COMMITTEE

We found that to do anything as an Association will call for considerable financing, and, as we already have an organization which is carrying on through the Department we thought it would be advisable to work from there.

We, your Potato Committee, voice our opinion that the seed industry in New Ontario is being conducted and developed by the Provincial Department of Agriculture in our best interests. That some start should be made by the Department towards producing some Early Ohio seed for special early growers.

That we as Clubs should send our orders to the Department not later than October 1st so that they may advise us where to purchase our necessary supplies of guaranteed stock up to field inspection standards.

We also were asked to report on the standards of grading, and I beg to submit this report: We, as a committee, approve of the standards recommended by the Onion and Potato conference on standards held at Ottawa December, 1920. A copy of this report to be sent to C. W. Baxter, Fruit Commissioner, Ottawa.

It was thereupon moved by Mr. Cooke, seconded by Mr. Oke, of Peterboro, That this report be adopted. Carried.

MY EXPERIENCE WITH FERTILIZERS ON TOMATOES ESPECIALLY AND OTHER VEGETABLE CROPS

W. M. Grant, Blenheim

In the season 1920 I conducted an experiment at the suggestion of A. H. MacLennan, Vegetable Expert, with the two most popular forms in which Commercial Phosphate is sold, to determine the relative merits of 16% acid phosphate and 26% bone flour, when used in connection with the growing of early tomatoes in the way of promoting early maturity and increasing the yield.

The land on which the 1920 crop was grown had the previous season produced a crop of fall wheat, which had been seeded to red clover. After the wheat had been harvested, winter rye at the rate of one and one-half bushels to the acre was drilled in. Both rye and clover made a splendid growth before the end of the season. This was turned down the following spring, and the land thoroughly cultivated.

About ten days before the plants were set out, acid phosphate was supplied to part of the plot at the rate of 800 lbs. to the acre and, on the balance, bone flour at the rate of 400 lbs. per acre, both being thoroughly worked into the soil.

When harvesting commenced, I found that the plot treated with bone flour gave fully 15% more ripe fruit in the first two weeks of the picking season and over the whole season a very much heavier yield than did the plot treated with acid phosphate.

In the season of 1921 I experimented with different combinations of fertilizers to determine their relative merits on the early tomato crop. The land the previous season had grown a heavy crop of Burley Tobacco. In the fall a light dressing of stock manure at the rate of six spreader loads per acre was applied. This was ploughed in, and the following spring the land was again ploughed and kept in good tilth by frequent cultivations till the plants were set out.

Four plots of equal size were marked off and planted. Two weeks later each plot was treated with a different fertilizer combination. This work was done by hand.

Plot No. 1 was treated at the rate of 400 lbs. per acre with a 2-10 fertilizer, the nitrogen in same being in the form of nitrate of soda and the phosphate 26% bone flour.

Plot No. 2 received an application at the rate of 400 lbs. per acre of 3-8-6 fertilizer, the nitrate and phosphate in this combination being the same as that used on the first plot, the potash content being in the carbonate form.

Plot No. 3 was treated at the rate of 150 lbs. per acre with tankage and nitrate of soda, just enough tankage being ground with the nitrate to keep the latter from setting.

Plot No. 4, straight nitrate of soda at the rate of 100 lbs. per acre was applied.

In the first ten days of picking, plot No. 1, (to which the 2-10 fertilizer had been applied) gave fully 15% more ripe fruit than any of the other plots. No. 2 plot which received a treatment of 3-8-6 was the second to ripen fruit and was fully a week ahead of plots three and four. Both of the latter came in practically at the same time. Over the whole season however, plot No. 3 (which had been treated with the nitrogen, tankage combination) gave much the heaviest yield, No. 4 in this respect being next, but the gain in yield on the two latter plots was more than offset by the amount of early fruit from plot No. 1 and the amount realized from sale of same.

From what I have observed during the two seasons referred to, I am convinced that phosphate plays an important part in hastening the maturity of the tomato crop, and of the two forms in which I used it, I very much prefer the bone phosphate to the treated rock.

In preparing the land for early cabbage and cauliflower, I like to plow in a good growth of rye or hairy vetch, preferably the latter and with this all the stock manure I can spare. Both of these being deficent in phosphate and potash, it is necessary to add them in the Commercial form. On part of the land I applied 4-2-6 at the rate of 500 lbs. per acre and to the balance at the rate of 550 lbs. per acre, combination made up as follows:

Tankage, 300 lbs.; Nitrate of Soda, 150 lbs.; Carbonate of Potash, 100 lbs.

The fertilizers were applied by hand in both instances and at separate intervals, the first as soon as possible after the plants were set out and the second two weeks later. In both seasons the crop treated with nitrate, tankage and potash gave not only the first and best heads but by far the heaviest yield.

As some of our most profitable early vegetable crops are in the ground but a short time, it is highly important that all fertilizers used in connection with the growing of these be in the most soluable form, otherwise the crop will not be benefited and the grower will be the loser. For this reason I have always made a practice of using the most active fertilizers available: nitrate of soda which runs 20% free ammonia; carbonate of potash carrying 50% soluble potash, ten times more soluble than the sulphate of potash, and 26% bone phosphate which while only citric soluble is so finely ground that the soil acids make it very quickly available, besides it is absolutely neutral and does not unite with any other soil element as does acid phosphate.

We must remember however that chemical fertilizers alone will not give satisfactory results. The soil must be in good mechanical condition, which means that there must be plenty of humus present to increase its moisture-holding capacity and to encourage the development of the soil bacteria, without which no soil can be productive. With the decreasing supply of stock manure each year, it looks as if we must in the future, depend almost entirely on green crops and commercial fertilizers if we are to maintain the soil fertility which will enable us to grow crops with profitable returns.

J. Lockie Wilson: What variety of tomatoes have you found to be the best?

W. M. Grant: For early outside crops we do not grow anything but the Earlianna. The Bonny Best can beat it as a Tomato but is not as early. The Earlianna gave the very best early fruit, and it is the early stuff that pays.

Q.—How about the John Baer?

W. M. Grant: It is a very good tomato, but we can not get it ripe early enough to give us a good price.

Mr. Lucas: Do you save your own seed or get it from outside?

W. M. Grant: I have been getting it from outside.

J. Lockie Wilson: How much earlier is the Earlianna than the Bonny Best?

W. M. Grant: I find it fully ten days earlier, and the first ten days in tomatoes is what you get the money for.

Q.—What about the June Pink? Have you had any experience with it?

W. M. Grant: My market does not care for a pink tomato. We could not sell a pink tomato in Chatham or Windsor.

Q.—What is the reason you do not save your seed?

W. M. Grant: For the same reason that many of us do not do what we should. I think myself it would be better if we would do it. Usually at that time of the year we are so busy that we do not do it.

W. Trick: I save my own seed, and I always select it when they are about $3 and $3.50 a basket. I find Bonny Best in Ottawa are better than the Earlianna. Last year I picked Bonny Best on the 5th of July.

W. M. Grant: What time did you start your seed?

Mr. Trick: About the last of February.

W. M. Grant: You got them wonderfully early.

J. Lockie Wilson: What variety do the canners like best—the pink or the red.

W. M. Grant: The Red; they would not buy the Pink tomatoes in this country. They want the Bonny Best, John Baer or Chalk's Jewel.

Q.—Could you tell us the amount of the acid phosphate and bone meal you put in one plot?

W. M. GRANT: In 1920 I used bone phosphate 800 lbs. to the acre, that is 16 per cent. acid phosphate. The next season I used 400 lbs. of the 26 per cent. bone flour and I found 400 lbs. of it better.

Q.—What is the nature of your soil?

W. M. GRANT: The soil on which the tomatoes were grown is a sandy loam, very high, the surface soil was sandy loam and a subsoil of clay gravel, very warm soil.

T. W. BAMFORD: How did you combat the green fly on lettuce?

C. FRETZ: We are making an experiment now. We have always had trouble with lettuce in combatting the aphis on the lettuce. The only thing that was

Celery Plant Grown for Seed.

known before this year was to smudge with smoke. Smoke has a tendency to rise up and your lettuce is on the ground. We have a dusting machine similar to the one sold at Burlington, and we have a 3 per cent. nicotine that a friend of mine brought over from the other side to try out. We tried it out on the lettuce. The tomato plants are on the shelves. If we smudged for the lettuce on the ground we would hurt the tomato plants. We used the dust on a patch of the lettuce as an experiment, and we found it killed the aphis and did not hurt the lettuce. The day before yesterday I ordered my man to do the whole house that way. We have got over the nasty part of this job by getting an extra extension on the floor. Our

house has two paths and three lands, and he follows down the path with the blower, takes the strip on one side, comes down the green house, and follows down again. If I understand it right, it is not the dust on the plant that kills the aphis, but contact. I would rather be the first fellow to make a mistake trying a thing out than to be the last and not get anywhere. Control the aphis with this new dust, dust it in, and I think it is going to do the work.

CHAIRMAN: Do you dust it in while the plant is dry or wet?

C. FRETZ: Anyway, but I would rather wet the house a day or two before and then come on and dust it.

A MEMBER: Is this nicotine very expensive?

C. FRETZ: Unfortunately I cannot say because it was given to me.

C. FRETZ asked MR. MACLENNAN if the nicotine was increased to a 3 per cent. it was not going to hurt the plants.

A. H. MACLENNAN: I have not tried it, but I may next year, because I am gradually trying to get it a little stronger. My idea always is prevention is worth a whole lot more than trying to cure after the disease is there, and if I can get rid of it without causing any trouble, it is worth what I put into it. I found out this afternoon that the tobacco company at Kingsville is going to try to produce the nicotine. If they do it is going to cut down the freight rates and also promote home industry. The only objection to the extra percentage is that you are liable, by lime coming in contact with the nicotine-sulphate, to break the combination.

C. FRETZ: This is being sent here by the Company over there and is backed up by them to give better results. What they have offered to do is that they will send their experts from over there to work with us. I do not think it is so much in the machine as it is in the stuff you are going to use.

MR. MACLENNAN: It is a combination of the two.

CANNING OF FRUITS AND VEGETABLES

W. H. Stewart, Aylmer, Que.

Some of you who are present here to-day may remember that I was one of those named on a committee at our last session to test the success of co-operation among the vegetable growers.

As a beginning, in the spring of 1921, having learned the requirements of the growers in the Ottawa district we succeeded in arranging (at a price considerably lower than that being charged by our local dealers) for the delivery of a car load of baskets and plant boxes direct from the factory. As a proof of the satisfaction of this plan, I may here state that our local growers have since co-operatively purchased, from the same firm, five car loads of baskets for use this coming season.

As the season advanced we found there was an unusually large surplus of tomatoes, especially in our district, and in order to avoid a complete loss of the crop we decided to try an experiment in canning. Our first requirement being a factory we chose a vacant building in Hull city which was most central for all growers; help was also plentiful and cheap in this locality.

The next step was to choose and secure the equipment. From information received through correspondence with the Home Canners' Association of Montreal, Que., we decided to purchase the Utility Outfit, it being the most inexpensive

and simple to operate, one of the principal points in its favor being: water can be brought to the boiling point very quickly although the amount of fuel used is not great. The outfits may be used either indoors or out in the yard.

For our purpose we used two outfits. The tomatoes, when canned, were cooked on a No. 216, which has a capacity of 216 No. 3 cans at one operation. The smaller size, No. 64, was used for scalding the tomatoes, etc.

Being unable to secure the regulation 2½ lb. cans on short notice we purchased, from a dealer in Ottawa, a supply of 3 lb. cans; these cans had the old fashioned caps, consequently required more solder and labor than the new type in use at present. The new cap, we learn, is fitted with sufficient solder which requires only to be heated to seal the can.

Actual canning operations:—

Select only good firm tomatoes and scald for about 2½ minutes in boiling water, then plunge them into a vat of cold water, afterwards removing to the peeling table. Seated at this table were women, who removed the skins and cores, the peeled tomatoes were next placed on cheese cloth covered buckets into which drained the surplus water; from here the tomatoes were packed by hand into the cans, a teaspoonful of salt having previously been placed in each can. When full the cans passed on to the wipers and thence to the capper, who seals and tips the cans ready for cooking. When a sufficient number of cans were ready they were placed in the boiler and cooked for a period of 22 minutes.

The results of following the above process gained for our pack a Government test of Choice Quality, almost Fancy. Had our help exercised a little more care in handling, and had the cans been plunged into cold water when removed from the boiler the resulting pack would no doubt have proved first quality.

Using two outfits of the above sizes with about 30 workers a pack of from 2,000 to 3,000 cans can be turned out per day. This would require daily a supply of from 100 to 150 bushels of tomatoes.

Our factory was not long in operation until we learned that in order to conserve the surplus of the tomato crop alone a factory with a much greater capacity would be necessary.

This being our first experiment in canning, and having to gain information as work proceeded, we naturally did not run the plant to full capacity, packing on an average only about 1,000 cans per day.

Our total cash outlay for finishing the 8,000 cans being about $900, and at the present market value of canned tomatoes, which is $1.80 per doz., a profit of about $300 would be realized, or 25 per cent.

My paper deals only with the canning of tomatoes; but should the canning of vegetables be desired the only difference in procedure would be in the preparation of the vegetable and the length of time required to process.

We are aware that the Department of Agriculture has done much in the past to stimulate increased production, and by the appointment of demonstrators, etc., has distributed information on the use of fertilizers and the suppression of insect pests; also awarded prizes for field crop and garden competitions all with gratifying results. Would we appear presumptous in requesting the same Department to go a step farther, and assist or encourage the erection of canning factories at different centres, thereby conserving great quantities of fruits and vegetables which annually go to waste.

A MEMBER: Would you recommend to use that for canning peas and corn?

W. H. Stewart said he had not tried it, but that users had told him it worked out equally satisfactorily on any kind of vegetables.

A Member: Can you afford to pay 50 c. a bushel for tomatoes?

W. H. Stewart: Yes.

The Same Member: If you can make that profit, why don't you go over into the tomato district and put up a factory, and I am sure the growers would welcome you?

W. H. Stewart: I don't think it will be any trouble to compete with the Dominion Canners, because home canned goods will always take precedence over factory canned.

The Chairman: Mr. Bushell brought this matter up at the directors' meeting yesterday, gave us a little talk on the subject, and as Mr. Bushell is interested in this matter, I know he will be glad to tell us all he knows.

R. J. Bushell: The Company which I represent is composed of four members. We put our money into it, but we did not go ahead as fast as we wanted to the first year. We are an incorporated company, doing business in the Province of Ontario. We have the sole right for the Province of Ontario to sell this machine. It is true it came from Quebec Province first. I happened to take a trip through the Niagara district two years ago when I saw fruit and tomatoes left lying on the ground, and they told me the reason was labor was so high and prices for the commodity so low, and also baskets were so high.

Our machine can be operated in the field. We sold two last year, one to the Hotel Dieu at Montreal and one to the Frontenac Hotel. The sisters at the Hotel Dieu and the proprietor of the Frontenac would not part with their machines. The proprietor of the Frontenac Hotel canned all his vegetables and fruits this year. We furnish literature, telling you how long to cook. I canned 20 cans of tomatoes in my back yard last year in twenty minutes, and I had them soldered ready for my pantry in thirty. When the tomatoes are canned we will take all you send and sell them for you on a 5 per cent. basis. They are catalogued under numbers, and the cans are numbered according to that number. If the wholesale man is not satisfied, and if there is anything wrong, we know from whom we got those cans. We have never had one complaint from Quebec Province with respect to bad canning. You are bound to get tomatoes in your garden that you can not ship. The market may be glutted, you can do your own canning. These machines are on sale. We have no agents in Ontario yet, but we are going to put them all through Ontario. It is a most complete system.

Q.—Do you just cook tomatoes for twenty minutes.

R. J. Bushell: Yes, and ten minutes to cool off and solder. The sisters at the Hotel Dieu did their own plums, pears and peaches in this machine.

Q.—What is the price?

R. J. Bushell: We have them from $30 up. The one I canned my tomatoes in cost $30. We find that we can get 1½ dozen cans from a bushel of tomatoes. You get about 35c. a bushel from the canning factory, and you can figure out your profit.

THE VALUE OF GREEN CLOVER CROPS AS FERTILIZERS

F. F. Reeves: I brought this question up at our last meeting of directors. That is what I am here for. You all know the problem that we are getting up against to-day, the furnishing of sufficient humus to grow our crops.

It has been my fortune this last three years to increase my acreage by fifty. We made a living and raised quite a family on fifty acres, and when you jump from nine acres—we only worked five—nine times as much, this problem bothers you far more than it ever did on the five acres. With that additional fifty acres it is a big problem. I am told to-day—although I have not bought any barnyard or stockyard manure this year—that it will cost us $3.50 a ton on the switch at Dixie. Can we stand it?

C. FRETZ said their manure cost them $1.50 a ton laid down at Vineland.

R. WILSON: It cost $2.50 a ton laid down at Clarkson, and of course that included the freight.

F. F. REEVES: If we can get it for that, we cannot get sufficient. You know what it was in Vineland last year. You were away behind on your shipments all during that district anyway.

C. FRETZ: The trouble was the people did not get their orders in early enough to get it. If we can order that the summer before, we can place our order for 25 carloads and have two cars a week coming. It costs us $1.50 a ton and the freight is a little over $1 a ton, and that makes about $2.55. Did you have yours loaded on the car? Perhaps you would stand a better chance in that way.

F. F. REEVES: That was loaded on the car and delivered. We tried some green cover crop last year and we found that the green cover crop plus the fertilizer, while it was not quite as good as a heavy crop of barnyard manure, gave reasonably good returns. But we cannot get sufficient barnyard manure under present conditions to give the land the amount we would like to. We gave a good price for the place, and we want to make it pay. The reason for my asking for this discussion on that subject was to find out what other people were doing and how they were doing it, so that we could gain by their experience. I wanted to find out what others are doing. No doubt we all know it is getting scarcer every year and harder to get. You know that around Toronto a year or so ago they were begging us to draw it away. There is no one begging us to take it to-day.

If we can find out what green crops to grow to plow in with commercial fertilizer added to it that will give us good results for a vegetable crop, that is the information we are after. We are carrying on the same experiment this year as we did last, only I would like to hear what other people have done.

A MEMBER: Would your idea be to get the cover crop in the spring?

F. F. REEVES: We have about between eight and ten acres that we want to put in late cabbage and cauliflower this summer. We can afford to wait until the first week in July or the last week in June. What I want to find out is what cover crop I can put in there that will give me sufficient to plow in for results. Another thing I want to find out is: we are growing from twelve to fifteen acres of early potatoes. I want to find out what crop I can put in after that that will give me a start for an early crop next spring. If Florida land that has never had a fork full of manure on it can grow all those heavy celery and other crops, why can't we do it? The big problem is: will it pay to purchase fertilizer at $72 to $100 a ton? Can we get the results from that?

C. FRETZ: It is not as dear as that now.

F. F. REEVES: 4-8 is $72 a ton.

C. FRETZ: I bought pure bone for my raspberry patch for $43, tankage at $45 or $48.

Another member said he bought bonemeal 36 per cent. for $48 a ton.

F. F. Reeves said it was the green crop information he was after. After your early potatoes, you will find a good crop of alfalfa will grow about 4 feet high.

J. R. Berney: I have had some experience with green crops after strawberries and potatoes, and I found that sweet clover was the best. It will come on and grow about 6 or 8 feet high, then it will come on the next spring very early and you can plow it down early enough for cabbage or cauliflower. Sweet clover is one of the best nitrogen getters we have. That was my experience on a small scale.

F. F. Reeves: In our experience around Toronto we have never tried sweet clover as a green manure, but we have cursed it as a pest. I have always been afraid of it because we have always had so much of it along the roads. We have blamed the bee-keepers for it.

A Member: I do not know why you should be afraid of sweet clover. I had the opposite experience with it. I cut sweet clover about the first of June thirty inches. They told me I would have a second crop to plow under. But not any more came up after cutting.

F. F. Reeves: We are surrounded by lots and property that has been sold for real estate, and much of it has been lying idle for years. That property is covered with sweet clover six or eight feet high, and it has been a curse to us.

W. S. Eborall: Mr. Reeves wants a cover crop after the potato crop, and the next year he wishes to plant cauliflower, potatoes and early stuff. I don't know of anything better that he can use than rape. That has been my chief cover crop. I have red clover in the orchard, but what Mr. Reeves is after is something to plow under. You can plant sweet clover or anything you like, but you will find nothing will give you the results that you will get from rape. But in the last two years there was no rape seed to be bought, and I lost that crop. Last year a mildew set in; there was a dry spell. I have plowed up rape when it was 4 feet high. I have sowed in the beginning of August, when I got the beans off. We did not even cultivate the land, we sowed it on top, and we got a good crop. We have grown buckwheat, but just when it was about ripe to plow under we are busy picking fruit and the consequence is it all goes to seed. Mr. Davis, I think, said buckwheat has a tendency to sour the soil.

A. H. MacLennan: Did you have any trouble with your rape coming up the next year?

W. S. Eborall: No; you get over that trouble cutting it to pieces with the disc. In our last cultivation in corn, when I can get good rape, I go through when the corn is top high and sow rape through it. We had a good crop of rape through the corn. We harvest our corn as early as we can and you get a good crop of rape to plow over.

F. F. Reeves: You don't use any barn-yard manure.

W. S. Eborall: Yes, we use quite a lot because I believe in keeping all the animals that you possibly can. We turn everything that we possibly can into manure. We do not buy any as we get quite a lot of our own. You know we have various fruits, peaches, pears, etc. Then I have my place cut up into two sections, one fruit and vegetables, the other field crops. We keep three horses and a cow and three or four pigs. The eighteen acres at the back we put into field crops. I have twenty-five acres, I found I had too much or not enough. The thing did not seem to be balanced up. I wanted to get some more acreage to raise feed for my cattle. This year I have oats enough for two years. I have not bought anything for my hogs, and we utilize every bit of crops from those big fields to grow

into manure. Then we grow strawberries. We get a good strawstack and we put it on to the strawberries and potatoes. Then we put in a good crop of rape. We never used fertilizers until last year.

F. F. REEVES: My experience with rape was that it did not come up.

W. S. EBORALL: Like everything else, you have to get the very best seed.

R. WILSON: Did you ever use rye to plow under before you set out your tomatoes?

W. S. EBORALL: Yes, but in using rye it did not apply to my particular work.

Q.—How high do you let your rape come up before you plow it under?

W. S. EBORALL: When there is the biggest bulk there. What we want is something quick. In rye you get the biggest bulk, but you do not get the humus.

F. G. FULLER: We sowed rye two years ago in the field and plowed it down in the spring and on part of that land we planted potatoes; on the other part we planted corn, and where we planted corn it over-lapped. Where we had planted the rye you could see from the time the corn came up where that rye had been plowed down, and the corn was easily one week earlier than where there had been no cover crop. I am satisfied that rye is first class cover crop, rape is also a good one, but before you can grow rape you have to have fairly good land.

W. S. EBORALL: Rye grown on our land in the Niagara district must be plowed in the fall if you want to get any crops at all. I have never been a truck gardener. The reason we don't grow rye is that if we sow it for a summer crop we are in the midst of our work when we have to plow it under.

A. H. MACLENNAN: I wonder if any one here has tested annual sweet clover. I saw a field of it at Brighton last fall, and if it will grow as well everywhere as it did there it should prove valuable. It was planted in May, and when I saw it the latter part of September or first part of October it was about 5 feet high. In regard to rye, I used it for a good many years on clay soil at Guelph College; we sowed three bushels to the acre and turned it down in the spring just before it was ready to form into head. If you leave it after that you will have trouble turning it under. I know that one year we used it up there on the early ground, plowed it down when it was about a foot or 14 inches high, and there was a difference of four to six days between the crop where the rye was plowed under and that on a piece of fall plowed land.

There is another feature and that is the heat that is generated in the rotting of this rye. It is that extra heat which starts your stuff just so much earlier in the spring. It contains the moisture too.

F. F. REEVES: We had one experience a year ago last fall. In September I was talking to Mr. MacLennan about this problem and he suggested that I try oats and peas. We had then about nine acres that had nothing on it and we put in 1½ bushels of oats and 1 bushel of marrowfat peas to the acre the last of July. We left it as late as we could without danger of frost, when it was ten to twelve inches high. It made a good mat. That was plowed in late in the fall. Last year we had early corn on that, Corry and Bantam. There was a strip left out of one acre in the middle of it that had no green crop turned under. There were eight spreader loads of manure to the acre put on it. This last year we grew corn on that crossways, and you could tell I believe to a hill where that green crop was and where it left off. And we had it both earlier and better where that green cover crop was.

A MEMBER: If you sowed the hairy vetch in September, a bushel of it and a half bushel of rye you could get a crop three feet high, which would rot down and spring up again in the spring.

A. H. MACLENNAN: In regard to that rye and Hairy Vetch, was your Hairy Vetch and rye big enough planted in September, to plow down in November?

THE SAME MEMBER: Yes.

A. H. MACLENNAN: Mr. Reeves wants something to plow down in the fall or the early spring for an early crop.

A MEMBER: I sow turnips in the summer and plow them under, and I am going to try early potatoes on it.

C. FRETZ: Are we right or wrong when we plow in a crop in the early spring or late fall when we want the warmth? We all agree that we are going to get fertility and humus, but if you want to get that quick early crop in the spring what do you do? You throw manure on there, and you get heat there. I have sold $1,800 of cucumbers off an acre of ground and I did not do it by plowing a cover crop under. It is possible to get manure; it is going to cost you more money, but you must get it to make more money out of the ground. I have twenty-eight acres of fruit trees and thirty acres which I originally intended to put in vegetables, and I have fertilized that with barnyard manure. I bought six tons of bone last fall and I put one bag to each row of raspberries. These rows were 433 feet long. It is sandy soil, with a sandy subsoil, and I have been using lime, and phosphates, and principally pure bone and pure tankage, and I had tomatoes on there last year and we picked a carload of tomatoes in one day. I have grown tomatoes where I had 2,000 bushels standing on four acres. I always advocate barnyard manure. A cover crop is all right if you can afford to let your land lie, but where you want to keep your land working it is no good. I would rather put in some stock if I had to do it.

F. F. REEVES: We have our barn full now.

C. FRETZ: There is a solution for us in the Niagara district. The boys are going in for a silo and putting in stock. You can believe it or not, but at Vineland station I have seen as many as ten cars of manure standing there at once. I had a contract last year for twenty-five carloads of manure. I put a carload of manure to the acre.

THE CHAIRMAN: Do I understand you to mean that neither cover crop nor fertilizers can be compared with barnyard manure?

C. FRETZ: No. If I can wait I would certainly put on a cover crop, provided I want to grow later crops in the summer. I would rather have barnyard manure and the fertilizers together. Then I work my land for intensive farming, so that I can afford to pay $2.50 for manure.

Q.—What do you do with your land after the early crop is over?

C. FRETZ: As soon as the early crop is off, the plow goes in and it is rolled. On our sandy soil the rolling is very necessary. Mr. Eborall's has this advantage that he has good black ground which was cleared eight years ago. That is all right to grow a cover crop provided that you have good strong soil to grow it, but if you have poor soil, what kind of a cover crop will you have?

J. LOCKIE WILSON: Your point is that the cover crop plowed down in the spring or fall has a tendency to take a lot of heat out of the soil?

C. FRETZ: Yes. Now if you want a specially early crop in the spring, if you put manure on to it in the winter, you will keep the heat.

F. F. Reeves: About keeping your farm stocked up: we have had to do that to get sufficient manure on the place. We have about sixteen head on the place now and you know what returns in manure that gives you. Last year we had about six acres of sweet corn and one of ensilage, then we grew mangels and sweet turnips. We buy our stock in the fall as cheap as we can. We have to buy some alfalfa and hay. We figure if we can sell that stock in the spring to cover our expenses for the feed that we have to buy and the initial cost of the cattle, that we are making money on the manure that they will produce during the winter season. But that is not enough for us, we want more, and if I can grow it on the ground I would rather have it there.

Q.—Can you get straw?

F. F. Reeves: No, we can't buy at $15 a ton.

A Member: I put straw on a cement floor and put twenty pigs in, as soon as those pigs are sold I get other pigs in, and it creates a fine manure.

A. H. MacLennan: Supposing you can keep cattle enough to get a small quantity of manure, you will still require to get commercial fertilizer; there is the problem before the grower. It is not a question of the man who can get manure now; it is the question of the man who can not get it and he has to find something to take its place.

WOULD FLOWERS BE A VALUABLE ADJUNCT TO VEGETABLE GROWING?

Geo. Baldwin, F.R.H.S., Toronto

The following is condensed from an address, illustrated by lantern slides: Would flowers be a valuable adjunct to vegetable growing, from a financial point of view? I am of the opinion that they would, and will give my reasons after showing some slides of my garden, explaining as I go along, the different varieties of flowers, and those most suitable for the purpose.

The first three slides give a rough idea of the size of my garden, showing it in the spring and fall, also how to improve the look of it. The next few slides will show the different kinds of flowers which go to make up the continuity, which is very necessary when you are selling flowers. They start off with the bulbs, which should be planted in the fall, October for preference, and consist of Tulips in variety, Hyacinths, Daffodils, Narcissus, Crocus, Snowdrops, etc., to be followed by the Flag Iris of which there are innumberable varieties and colors, and then the Paeonies the blooming period of which, if you get the early, mid-season and late varieties, will be prolonged to at least six weeks. Then come the Lilies, which, if you get sufficient quantities and the right varieties, will give you continuity of bloom from the 2nd week in June, to the 3rd week in September, by having the following, which will bloom in the order named. Tenuifolium or Scarlet Turk's Cap, Candidum or Madonna Lily, Croceum better known as the Orange Lily, Wallacei, Tigers single and double, Henryi the hardiest of them all, to be followed by the early Speciosums Rubrum, Roseum, and Album (to get them early they must be planted in the Fall) and then come the Giant or Aristocrat Lilies, the Auratums, Platyphylum and Vitatum, and wind up with the late Speciosums Rubrum, Roseum, and Album, which must be planted in the Spring for late blooming.

The Rudbeckias Fulgens, Newmanii, and Echinacea will give good results, and will follow the Paeonies, then come the Phlox Perennial, and, like the

Paeony, if you get the early, mid-season and late varieties the blooming period will be extended for fully 3 months, starting off with Miss Lingard a pure white, and winding up with Tragedy a dark red. The Delphiniums will start blooming at this time, and I recommend your raising your own seedlings. It is wonderful the beautiful varieties that can be had from this process, this slide gives you a close up view of a 3 year old plant, showing the quantity of bloom from one plant, and you can get another crop from this same root before frost comes by cutting off close to the ground as soon as blooms are ready to cut. The Roses, if you get the Hybrid Tea varieties, will give you continuous bloom right through the summer. Standard Roses are hard to Winter, so you are recommended to dig them up and bury them 10 inches deep in a trench, you will then make sure to have them in the spring, planting them again the first week in April, regardless of weather. The Hydrangea is a hardy blooming shrub and is useful for its blooms. Next comes the Gladiolus in hundreds of varieties, a flower that sells well, and ships well, they need to be planted in trenches 5 inches deep as shown in the picture.

We must not forget the Annuals, as they fill up the gaps in the continuity, chief of which is the Aster, especially of the branching varieties. The bloom in your garden will finish up with the Boltonias, Helianthus, Heleniums, Perennial Asters, and last of all the Chrysanthea Uliginosum.

The next two or three slides will perhaps interest you more than the flowers, being the systems that I have adopted in raising Tomatoes, and Onions, and which I will explain more fully on the black-board.

Now my reasons for advocating the growing of flowers are as follows: It is a well known fact that poor people are just as fond of flowers as the well to do people, but the poorer people cannot afford to pay the price of hot-house grown flowers, and I believe that if all the Florists and Flower sellers were canvassed, you would find that nine out of ten would be willing to buy garden flowers, providing they were good, and could get sufficient quantities, and regular. Garden flowers if picked the night before, and put in water in a cool cellar, will ship as well, if not better than hot-house flowers.

In view of the fact that the markets of most towns and cities, are being flooded with foreign grown vegetables, from the Southern States and California, something has got to be done for our Market Gardeners and Vegetable growers, either along the lines of growing more under glass, improved methods of growing in the fields, or a strong deputation to interview the Federal Government, with a view to having the Tariff raised, to enable the Market Gardeners of this Province to make a decent living.

A MEMBER: What kind of fertilizer do you use?

GEO. BALDWIN: I am fortunate in being able to get barnyard manure from the stockyards. I find it is the best.

J. LOCKIE WILSON expressed the opinion that he thought the coming of Mr. Baldwin would be justified if it would lead the growers into a line which would be profitable to the members.

F. F. REEVES voiced his great admiration for Mr. Baldwin and the results he had obtained in his small garden, and coupled herewith a vote of thanks to Mr. Baldwin for coming and entertaining the Association. Carried.

The Convention was closed with the singing of the National Anthem.

Ontario Department of Agriculture

Fifty-Second Annual Report

OF THE

Entomological Society

OF ONTARIO

1921

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1922

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To His Honour, HENRY COCKSHUTT, ESQ.,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration, the Report of the Entomological Society for 1921.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1922.

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Entomological Society of Ontario

OFFICERS FOR 1921-22

President—Mr. F. J. A. Morris, M.A., Peterborough.
Vice-President—Dr. J. M. Swaine, Entomological Branch, Ottawa.
Secretary-Treasurer—Prof. A. W. Baker, B.S.A., O. A. College, Guelph.
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Directors (ex-President of the Society)—Rev. Prof. C. J. S. Bethune, M.A., D.C.L., F.R.S.C., Toronto; Prof. John Dearness, Vice-Principal, Normal School, London; Prof. Wm. Lochhead, B.A., M.S., Macdonald College, Que.; John D. Evans, C.E., Trenton; Prof. E. M. Walker, B.A., M.B., F.R.S.C., University of Toronto; Mr. Albert F. Winn, Westmount, Que.; Prof. Lawson Caesar, M.A., B.S.A., O. A. College, Guelph; Arthur Gibson, F.E.S., F.E.S.A., F.R.S.C., Dominion Entomologist, Ottawa.
Editor of "The Canadian Entomologist"—Dr. J. McDunnough, Entomological Branch, Ottawa.
Delegate to the Royal Society of Canada—The President.

FINANCIAL STATEMENT

For the year ending October 31st, 1921.

Receipts.

Cash on hand, 1920	$94 15
Subscriptions	494 31
Members' Dues	135 40
Advertisements	226 86
Back Numbers	21 51
Bank Interest	6 45
Exchange	27 22
Cuts, etc.	69 32
Government Grant	1000 00
	$2075 22

Expenditures.

Printing	$1861 46
Expense	40 46
Library	6 50
Cuts, etc.	109 68
Exchange	1 87
Balance Cash in Bank	55 25
	$2075 22

Accounts Receivable,

Advertising	$140 00	
Cuts, etc.	58 86	
		$198 86
Cash in Bank		55 25
		$254 11

Accounts Payable.

Printing	$320 00
Salary	100 00
Cuts	56 77
Annual Report	25 00
Salary and Annual Report (Arrears)	125 00
	$626 77
To Accounts Payable	$626 77
By Accounts Receivable and Cash in Bank	254 11
Net Deficit	$372 66

A. W. Baker,
Secretary-Treasurer.

Entomological Society of Ontario

ANNUAL MEETING.

The fifty-eighth Annual Meeting of the Entomological Society of Ontario was held at the University of Toronto during the week of December 28th. The meeting was held at this time in order to afford our members an opportunity of meeting with the members of the Entomological Society of America and of the American Association of Economic Entomologists.

Among the members present were Dr. C. J. S. Bethune, Toronto, Ontario; Mr. J. D. Evans, Trenton, Ontario; Prof. J. H. Comstock, Ithaca, N.Y.; Dr. L. O. Howard, Washington, D.C.; Dr. E. P. Felt, Albany, N.Y.; Prof. E. M. Walker. Dr. W. A. Clemens, Dr. Craigie, Mr. Bigelow and Miss Norma Ford, Toronto University; Messrs. A. Gibson, Dr. Swaine, L. S. McLaine, R. C. Treherne, H. G Crawford, F. C. Craighead, Dominion Entomological Branch, Ottawa; Profs. L. Caesar, A. W. Baker and Messrs. G. J. Spencer and W. G. Garlick, O. A. College Guelph, Ont.; Miss Edna Mosher, Albuquerque, N.M.; Father Leopold, La Trappe, Ont.; Prof. W. H. Brittain, Truro, N.S.; Mr. F. J. A. Morris, Peterborough, Ont.; Dr. J. D. Detwiler, Western University, London, Ont.; Mr. C. H. Curran, Orillia, Ont.; Mr. W. E. Biggar, Hamilton, Ont.; Prof. A. V. Mitchener, M.A. College, Winnipeg, Man.; Dr. Matheson and Mr. H. C. Huckett, Cornell University, Ithaca, N.Y.; Drs. S. Hadwin and A. C. Baker, Washington, D.C.; and the following officers of the Dominion Entomological Branch:—Messrs. G. E. Sanders, Annapolis Royal, N.S.; J. D. Tothill, Frederickton, N.B.; C. E. Petch, Hemmingford, Ont.; W. A. Ross, Vineland Station, Ont.; H. F. Hudson, Strathroy, Ont.; Norman Criddle, Treesbank, Man.; E. H. Strickland, Lethbridge, Alta., and W. Downes, Victoria, B.C.

The meetings were also well attended by members of the Entomological Society of America, The American Association of Economic Entomologists and others.

On Wednesday afternoon a meeting was held with the Entomological Society of America in Room 10, Medical Building, at which a number of papers were contributed by members of the two societies.

On Friday evening an Entomologists' dinner was held at the Prince George Hotel under the auspices of the American Association of Economic Entomologists. Many members of our society accepted the kind invitation of this society to be present.

The business meeting was held on Saturday morning. Considerable discussion in regard to the financial condition of the society took place.

REPORT OF THE COUNCIL.

The council of the Entomological Society of Ontario begs to present its report for the year 1920-1921.

The fifty-seventh annual meeting of the society was held at the Ontario Agricultural College, Guelph on Wednesday and Thursday, November 17th and 18th, 1920.

The meeting was well attended by members of the society from the various provinces of the Dominion, members of the staff of the Ontario Agricultural College and other visitors from Ontario, as well as several distinguished ones from the United States. Among the latter were Dr. E. P. Felt, State Entomologist, Albany, New York; Professor C. P. Crosby, Cornell University, Ithaca, New York; Messrs. W. R. Walton and L. H. Worthley, Bureau of Entomology, Washington, D.C.

The following papers were presented at the meeting: "Notes on Leaf Bugs (Miridae) Attacking Apples in Ontario," by Prof. L. Caesar; "The Manitoba Grasshopper Campaign, 1920," by A. V. Mitchener; "Some Phases of the Present Grasshopper Outbreak in Manitoba," by N. Criddle; "The Influence of Locusts on the Ranges of British Columbia," by E. R. Buckell; "The Beet Webworm Outbreak of 1920," by E. H. Strickland; "Paris Green should be Discontinued as an Insecticide," by Rev. Fr. Leopold; "Present Status of the Hessian Fly in Western Ontario," by H. F. Hudson; "Life-history of a Hobby Horse, 3rd and concluding part," by F. J. A. Morris; "Recent Investigations in Forest Insects," by Dr. J. M. Swaine; "Further Evidence of the Effectiveness of Mercury Bichloride in the Control of the Cabbage Root Maggot in British Columbia," by R. C. Treherne; "Some Further Data on the Cabbage Maggot (*Phorbia brassicæ*)," by Prof. L. Caesar; "Some of the Broader Aspects of Insect Control," by Dr. E. P. Felt; "Codling Moth Investigation in Michigan," by Prof. R. H. Pettit; "Insects of the Year in Ontario," by Prof. L. Caesar and W. A. Ross; "Interrelations in Nature," by Prof. W. Lochhead; "Notes on *Psyllia mali* Schmid," by Prof. W. H. Brittain; "Collecting Lepidoptera in the West and Far West," by Dr. J. O. Corcoran; "The Control of the Rose Midge" by W. A. Ross; "Insects of the Season in Quebec District," by George Maheux; "Some Mosquito Problems of British Columbia," by E Hearle.

In addition to the papers presented at the meeting a very interesting discussion took place on the European Corn Borer in which many members and visitors took part.

The Canadian Entomologist. the official organ of the society completed its fifty-second volume in December last. The volume contained 290 pages, illustrated by eleven full page plates and twenty-five original figures. The contributors to these pages numbered fifty-eight, and included writers in Ontario, Quebec, Manitoba, Alberta and British Columbia, and also in sixteen of the United States, in south America, Hawaiian Islands and Japan. Ten papers were published during the year on popular and practical entomology.

It is the sad duty of the council to record the loss of two of our best-known members. The Rev. Dr. Fyles was one of the oldest members of the society. He has long been a contributor to the pages of the *Canadian Entomologist* and to the annual report of the society. His presence at our annual meetings was looked forward to by all members. For thirty-four years he did not fail to furnish a paper for these meetings. He died at Ottawa on Tuesday, August 9th, in his ninetieth year. A full account of his life and works was published in the November number of the *Canadian Entomologist*.

Mr. F. W. L. Sladen, Dominion Apiarist, met accidental death by drowning off Duck Island in Lake Ontario on September 10th. Mr. Sladen joined the society in 1912, and has been an active worker in the various groups of the aculeate hymenoptera since that time. An obituary appeared in the October number of the *Canadian Entomologist*.

It would not be fitting to close this report without a reference to the fact that Dr. C. J. S. Bethune has given up active work in Entomology at the Ontario Agricultural College and is now living in well earned retirement in Toronto.

The council also wishes to express its regret that the illness of Prof. Lochhead has prevented him from being present at this meeting. It is hoped that soon he again will be able to take up his duties in Entomology.

REPORT OF THE NOVA SCOTIA BRANCH.

Since the last report was presented to our parent Society our scope has been broadened out to include the Maritime Provinces and our name changed to the *Acadian Entomological Society*. A new number (1920) of our "Proceedings" was published in March 1921 comprising 89 pages and including considerable new data on the biology and control of insects.

Two meetings have been held—one in Halifax, N.S. and the other in St. John, N.B.—The papers presented at the Halifax Meeting were published in the last Proceedings. At the St. John Meeting the following papers were read and discussed:

The Alpine Flora of British Columbia, (Public Lecture)	Dr. John D. Tothill.
Some Properties of the Lead Arsenates	A. Kelsall.
Insecticide Investigations in New Brunswick	G. P. Walker.
Some notes on the Female Reproductive Organs in the Hymenoptera	A. B. Baird.
The Work of the Museum of the New Brunswick Natural History Society, St. John, N. B.	Wm. McIntosh.
Experiences in the Collection and Study of Hymenoptera	A. Gordon Leavitt.
The Production of Altae in certain Aphididæ	Prof. W. H. Brittain.
Life History and Natural Control of the Pine Leaf Scale	R. P. Gorham.
Losses caused by the recent outbreak of the Spruce Budworm in New Brunswick	J. D. Tothill.

The following officers for the year 1922 were elected:

Hon. President	Dr. A. H. Mackay, Halifax, N. S.
President	Mr. Wm. McIntosh, St. John, N. B.
Vice President	Prof. W. H. Brittain, Truro, N. S.
Sec. Treasurer	Mr. A. B. Baird, Fredericton, N. B.
Asst. Treasurer	Mr. W. E. Whitehead, Truro, N. S.
Member of Committee	Dr. Edna Mosher, Albuquerque, New Mexico.

A. B. Baird,
Secretary-Treasurer.

REPORT OF MONTREAL BRANCH.

The 400th regular and 48th Annual Meeting of the Montreal Branch was held in the Lyman Entomological Room, Redpath Museum, McGill University on Thursday, May 12th, 1921.

The President read his Annual Address which was entitled "The lighter side of Entomology" which was both amusing and entertaining.

The Council's report showed that eight meetings had been held during the season with a total attendance of 91.

Field Days were held at St. Hilaire on Victoria Day and Labour Day at which good catches were taken.

Papers were read and talks given by nine members during the year as follows:—

1. President's Address. "The Value of a long series of Specimens .. A. F. Winn.
2. Aradus luteolus Fyles ..... Geo. A. Moore.
3. Collecting in England, 1919 ..... L. Gibb.
4. The breeding of Ants in a formicary ..... G. H. Hall.
5. Hemiptera from Peaks Is. Me. 1918-19-20 ..... Geo. A. Moore.
6. Collecting at Great Chebeague, Me. ..... A. F. Winn.
7. Trip through the Western Provinces ..... Dr. Corcoran.
8. Sugaring for Catacolas ..... J. W. Buckle.
9. Heredity ..... Geo. A. Moore.
10. The Association of Pentatomids with certain plants ..... A. F. Winn.
11. Work of the Entomological Branch of the Dominion Department of Agriculture ..... A. Gibson.
12. Notes on Notonectidæ ..... T. C. Baines.
13. Annual meeting of the Quebec Society for the Protection of Plants ..... A. F. Winn.
14. Entomology in France ..... M. Du Porte.
15. Notes on the genus Utetheisa Hubn. (Arctiidæ) ..... A. F. Winn.
16. Fulgoridæ ..... Geo. A. Moore.
17. Large Copper Butterfly and Varieties ..... L. Gibb.
18. A butterfly hunting trip in the Orient, 1919-20 ..... H. M. Sims.

The following were elected officers for the ensuing year:—

President ..... A. F. Winn.
Vice-President ..... G. Chagnon.
Secretary-Treasurer ..... Geo. A. Moore.
Librarian ..... J. W. Buckle.
Council ..... Dr. Corcoran, G. H. Hall, A. C. Shepherd.

Geo. A. Moore,
Secretary.

ANNUAL REPORT OF THE TORONTO BRANCH.

The twenty-fifth Annual Meeting of the Toronto Branch was held in the Biological Building on October 26th, 1921.

The report of the council showed that during the past season seven regular meetings and a field meeting were held at which there was an average attendance of sixteen persons. At a special meeting we were very fortunate in having as the speaker Mr. F. Morris of Peterborough, who read Part III of his delightful paper, "The Life-history of a Hobby Horse." This lecture had an attendance of about seventy. During the year the following papers and addresses were given:

"Respiration of Insects" ..... Prof. E. M. Walker.
"The Life-History of a Hobby Horse" ..... Mr. F. Morris.
"Protective Coloration" ..... Mr. C. W. Nash.
"Hymenoptera of Point Pelee" ..... Mr. N. K. Bigelow.
"Notes on Insects of Point Pelee" ..... Mr. S. Logier.
"The Bees in the Collection of the Royal Ontario Museum" ..... Mr. N. K. Pigelow.
"The Rearing of Lepidoptera" ..... Mr. R. W. Hall.
"Insect Food of Bears" ..... Mr. N. K. Bigelow.
"The Ant Fauna of the Nipigon Region" ..... Mr. S. Logier.

One new member was elected, viz, Miss Mary Pettigrew. The Treasurer's report showed a balance of $22.52.

For the season of 1921-1922 the following officers were elected:—

President ..... Mr. S. Logier.
Vice-President ..... Mr. A. H. Leim.
Secretary-Treasurer ..... Miss Norma Ford.
Librarian ..... Mr. N. K. Bigelow.
Council ..... Dr. Walker, Mr. Andrews, Mr. Blakely, Mr. Hall.

Norma Ford,
Secretary-Treasurer.

REPORT OF THE BRITISH COLUMBIA BRANCH.

The twentieth annual meeting of the B.C. Entomological Society was held in the Chamber Court Room of the Provincial Court House, Vancouver, B.C. on Saturday, February 12th, 1921. There was an attendance of seventeen members at the morning session and twenty-two in the afternoon.

The meeting was called to order at 9.30 a.m. and the Secretary read the annual report and statement of accounts. Among the resolutions passed it was decided to take steps to have the Society incorporated under the Benevolent Societies' Act. The annual subscription was raised to $2.00.

During the morning and afternoon sessions the following papers were read:—

A review of Economic Entomology in British Columbia and its progress in recent years..... R. C. Treherne.
Notes on the early stages of Nepytia Phantasmaria .. G. O. Day.
The Lepidoptera of the Kootenay ..... J. W. Cockle.
A Talk on insects imported from the Orient..... W. H. Lyne.
Notes on the Fauna and Flora of Mount McLean.. R. Glendenning.
Man's influence on the native flora with special reference to insect pests ..... J. Davidson.
The Sphingidae of British Columbia ..... E. H. Blackmore.
Notes on Amnesia decorata and the Holly Bud Moth. W. Downes.
Notes on the Satin Moth ..... R Glendenning.
Report on collections of Hemiptera from B.C. ..... Dr. H. M. Parshley.
Notes on the ecological distribution of some Orthoptera from the Chilcotin district of B. C. ..... E. R. Buckell.

In celebration of the twentieth anniversary of the Society the members met for supper at the Citizens Club and later returned to the meeting room and listened to a lecture by Mr. W. B. Anderson on "Collecting Places in B.C." illustrated with lantern slides. It was decided to hold the next meeting in Victoria.

During the season the Society will publish four numbers of its annual Proceedings, namely, Nos. 16 and 18 of the Systematic series and No. 13 and 15 of the Economic series, and a complete index to all numbers published, from 1 to 15, is being prepared by one of our members, Mr. E. P. Venables, and will be published shortly.

The Society is in a flourishing condition and the members now number forty-one.

W. Downes,
Hon. Secretary-Treasurer.

REPORT OF THE ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA.

The twenty-first annual meeting was held in Victoria on Saturday, January 21st. 1922.

The President L. E. Marmont was in the chair and 14 members were present.

The Secretary's Report and Financial Statement was read by Mr. R. Glendenning, Assistant Secretary, in the absence of Mr. Downes.

The business and discussion upon it occupied nearly the whole of the morning session, the subjects being:—The continuance of the Entomological Record; The Society's Cup offered for school competition: The by-laws revised for incorporation, and the proposed increase in subscriptions to the parent society.

The following motion was passed relative to the last subject "That this Society thinks a subscription of $1 to the Ontario Entomological Society is sufficient, in view of the decrease in prices."

The following papers were read:—

The use of Spreaders in Poison Sprays ..... A. L. Lovett.
Hemisarcoptes malus and its relation to Oyster shell scale E. P. Venables.
Economic Insects of the Year in the Lower Fraser Valley. R. Glendenning.
A talk on the Chilcoten country and its Orthoptera. .... E. R. Buckell.
(illustrated with lantern slides).
The Teaching of Entomology in the public schools ..... J. W. Gibson.
Aerial Surveys as an aid to Entomological Investigation.. E. Hearle.
The life of the poplar sawfly ..... W. Downes.
The European earwig in B.C. ..... R. C. Treherne.
Incidental observations regarding certain insects ..... W. H. Lyne.

Election of officers resulted as follows: —

Honorary-President ..... F. Kermode,
President ..... L. E. Marmont.
Vice-Presidents ..... R. S. Sherman (Coast).
M. H. Ruhmann (Interior).
Advisory Board.—The above and E. H. Blackmore, W. H. Robertson. J. W. Gibson. W. H. Lyne. E. Hearle.
Hon. Secretary-Treasurer ..... R. Glendenning. Agassiz, B.C.

A hearty vote of thanks was accorded to Mr. W. Downes, the retiring Secretary, for his valuable services.

It was decided that the next meeting would be held in Vancouver.

R. Glendenning.
Hon. Secretary-Treasurer.

REPORTS ON INSECTS OF THE YEAR.

Division No. 3. Toronto District—A. Cosens.

The promise of the warm weather of April was not fulfilled in an early spring. There were no insects of any kind plentiful until June. On May 28th, the Toronto Entomologists held a field day at Lawrence Park, north of the city. Although the day was warm and sunny only a few captures were made. Two butterflies were taken:—the Meadow Fritillary, *Brenthis bellona*, and the Common Blue, *Lycaena ladon*. A few Cabbage butterflies and Common Sulphurs were seen, also two or three Tiger Swallowtails, *Papilio turnus*.

Again this season as in 1920 and 1919, the Monarch butterflies were rare. They became more plentiful later in the season as the following dates on which specimens were seen show:—Sept. 21st, 22nd, 26th, 29th, Oct. 1st and 3rd.

Early in June, from about the 10th to the 14th, large beetles were reported to be emerging from a lawn in the northern part of the city. The question concerning whether they were harmful or not led to the examination of a couple of specimens. They were found to be Stag Beetles, *Lucanus dama*. The group owes its name to the peculiar mandibles of the male, which are very long, sharply pointed, sickle-shaped and bear in this species a small tooth on their inner edge near the centre. The head is correspondingly large in the male, being much

smaller in the female. The eggs of the beetles are deposited, about the end of July, in the bark of a tree, commonly willow or oak. The long, thick, white larvæ require several years to reach full development. When mature they build a cocoon of the chips formed in their feeding. By boring into the trunks and the roots of the trees they sometimes do considerable damage.

An explanation of their emergence from the lawn is found in the nature of the soil in that part of the city. A great deal of filling in was done in that district when it was opened up for building operations. Trunks of trees were no doubt buried at that time and from these the bettles were emerging.

The Stag beetles are closely related to another family, the Scarabeidæ. This includes two main groups, the beneficial scavenger beetles and the injurious leaf-chafers. The former contains forms that have the curious habit of rolling up balls of manure to provide food for their larvæ. The historically interesting Sacred Scarabeus may be taken as a type of this group. These beetles were held in such high veneration by the Egyptians that paintings and carvings of them are often found among the relics of this ancient people. Some of the beetle models are small and made of gem stones or of gold, while others are large and fashioned from less expensive materials, a granite specimen in the British Museum being four feet in length.

The June-bugs or May-beetles, *Lachnosterna fusca,* are the most familiar examples of the leaf-chafers. Their white larvæ, often plentiful in sandy soil, are very injurious to pastures, strawberry patches etc. The large, brownish black adult beetles feed on the foliage of fruit trees and in some instances do appreciable damage.

POISONED MOLASSES FOR THE DESTRUCTION OF NOCTUID MOTHS.

By E. H. Strickland, Entomological Branch, Ottawa.

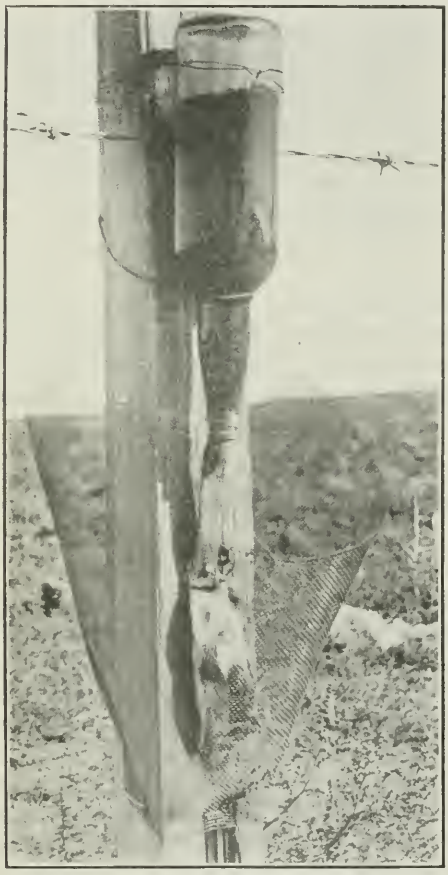
The annual loss on the western prairies from the destruction of grain crops by the Pale Western Cutworm (*Porosagrotis orthogonia* Morr.) has amounted in recent years to several millions of dollars. Numerous experiments, conducted in the infested provinces and states, have failed to produce an effective method of controlling this pest in its larval stage. For this reason the problem of destroying the adults before they have reproduced has received considerable attention.

Three methods have presented themselves to us as a possible means of gaining this end, namely, light-traps, molasses troughs and poisoned molasses. In experimenting with these we have aimed at producing a method that will have the following qualifications; all materials used are readily procurable in any farming community, very frequent attention to traps is unnecessary, and it is inexpensive to operate. The employment of poisoned molasses approaches more closely to the fulfillment of the conditions than does either of the other methods.

Light-traps.

In 1913, we placed a few light-traps in fields around Lethbridge, where an outbreak of *P. orthogonia* had been somewhat severe. The nightly catch never exceeded 58 moths of this species, and of the total capture 97.5% were males. For this reason we considered the method to be economically ineffective. In 1920, Circular 94 of the Montana Experiment Station recorded a night's capture of as many as 1,500 moths of this species in individual light-traps which were of a superior type to that which we had used in 1913. This year Mr. H. L. Seamans,

who has recently come from the Montana Station to take charge of the Dominion Entomological Laboratory at Lethbridge, constructed a number of traps similar to those in which these large captures were made. Two of these were set out in a badly infested field at Lethbridge, and about six were operated by our assistant Mr. W. Carter with the help of some farmers in the very heavily infested district around Retlaw, which is about sixty miles to the north-east of Lethbridge. These traps were set out from the middle of July till September 8th, when snow and frost put an end to the flight of *P. orthogonia*. During periods of moonlight, high wind and other unfavourable weather these traps were not operated.



Trap so arranged that the majority of moths will be retained.

The most suitable type of trap for moth destruction.

THE ALBERTA MOTH TRAP

The results were disappointing. The largest capture of *P. orthogonia* at Lethbridge was 517 males and 17 females, the average per "trap-night" being 84.3 males and 2.03 females. The Retlaw traps captured 41.3 males and 3.8 females per "trap-night." Of the total capture of 34,500 specimens of *P. orthogonia* which were taken in the field by light-traps 94.97% were males. This percentage was very little better than that obtained in 1913.

We do not know to what extent the males are monogamous in nature, but it would appear that on this factor alone depends any appreciable benefit to be derived from light-traps.

We consider light-traps to be unsatisfactory as a general method of control on the prairies for the following reasons: —

1. They require attention twice daily.
2. They are somewhat expensive to operate.
3. They are practically ineffective during periods of full moon.
4. They are not well adapted to a windy country.
5. For the species under consideration they catch too small a percentage of females.

Molasses Troughs.

This method was suggested by the experiments conducted by Dobrovljansky* for the control of *E. segetum* in Russia. Early in September 1920, three galvanized iron troughs, 2 feet long and 6 inches wide and deep, were set out in a badly infested area. Each was half filled with a 66% solution of molasses in water. On the first night they captured a total of 382 moths of which 135 were females of *P. orthogonia*. A slight crust had formed on the surface of the molasses by the following night when 16 moths only were retained. Of these 8 were females. It was obvious that we might be attracting to the field moths that we were unable to capture and that possibly our troughs were doing more harm than good to the owner.

Attempts to improve the consistency of the molasses solution failed to give satisfactory results. In a 50% solution many moths swam to the sides and escaped while any stronger solution crusted over in a very short time. Some twenty troughs were used in 1921, and attempts were made to retain the moths in weak solutions by the addition of vegetable and other oils, with tanglefoot and with poisons, but without success.

This method was early abandoned for the following reasons:

1. The troughs require very frequent attention.
2. A great many of the moths escape.

Poisoned Molasses.

P. orthogonia comes very readily to "sugar" applied to fence posts. A fence post can be kept permanently "sugared" every evening for from ten to fourteen days by means of a simple apparatus. The only material required is a quart bottle with a cork to fit, 6 inches of lamp wick and a small piece of absorbent cloth. The bottle is filled with the sugaring mixture and the end of the wick, which has first been well saturated in the mixture, is inserted. A well-fitting cork, that has been slightly flattened on one side by cutting away a small portion with a knife, is pressed fairly tightly into the bottle with the flattened side next to the wick. The bottle is then inverted and wired or tied to the west side of a fence post, and the free end of the wick is nailed to the post through a piece of absorbent cloth. When a rapidly killing poison is used, and it is desired that material obtained be preserved, a partial funnel of mosquito netting or paper can be attached to the post. A modification, suggested by Mr. Carter, is to replace the cloth with a shallow pan made from a tomato can. This forms a reservoir for any surplus flow of poison.

The bottle is fastened to the west side of the fence post in order that it will not be exposed to the direct rays of the sun till the afternoon. The heat then causes its contents to expand and to drive some of the liquid down the wick and on to the cloth. This action usually continues till nearly sunset and it liberates sufficient bait to attract moths throughout the night. After the sun has set a reverse pressure in the bottle draws in sufficient air to replace the expelled liquid.

*Extract in Rev. applied Ent. Series A. Vol. I, page 490, 1913.

Provided the variations in temperature are not too extreme, or fermentation too rapid, a quart bottle will run every evening for from ten to fourteen days. We have tried several modifications of reservoir and methods of controlling the flow of bait, such as the "drinking fountain," siphon, and gravity feed, but find the inverted bottle to be as satisfactory as any.

Having obtained a satisfactory apparatus, our next concern was to find a suitable poisoned bait. As a basis a 10% solution of cane molasses was used in all cases. This ferments within a few days of mixing. In the fall of 1920, experiments were made in which the decantation from a saturated solution of white arsenic was used as the diluent. This killed moths in the laboratory in from 8 to 40 hours, but was found to be somewhat deterrent to feeding.

When this solution was used in bottle traps moths fed on it and obtained sufficient poison to cause their death within 24 hours. This was proved by captured specimens. In the field, however, they all flew from the traps before dying. It was hoped that some immediate killer could be obtained in order that we might estimate the value of the traps, and be certain that gravid females were unable to deposit their eggs before dying. It was also highly desirable that those who might be using the traps as a practical means of control should be able to see some results from their efforts in the form of dead moths.

To this end we planned a series of experiments in 1921, but it was not until nearly the end of the season that Mr. Seamans found quassia to be the nearest approach to what we desired. Subsequent observations showed that this material must be used in conjunction with some other poison.

Among substances employed with the hope of obtaining an immediate killer were various arsenicals, soluble strychnine, copper sulphate, formalin, mercuric chloride, sodium cyanide in solution, and sodium fluoride. All of these failed to kill in less than about 12 hours except in strengths that proved to be deterrent. Arsenical poisons showed the least deterrent effect in the field when they were employed in weak solutions. Various objections to most of the forms of arsenic that are readily available to a farming community decided us to adopt commercial fly pads, at the rate of one pad per quart of solution, as the most satisfactory source of supply. At this strength the arsenic is very slightly deterrent and there is no precipitation. The pads can either be soaked in the solution over-night or cut into strips which are inserted into the bottles. Moths captured while feeding on bottles so poisoned died in from six to one hundred hours, depending upon the amount of feeding prior to capture. The majority of poisoned moths died within 36 hours. Checks taken from unpoisoned bottles lived for an average of 130 hours without subsequent feeding.

The season was unfavourable for bait traps. A very dry summer had resulted in the failure of many crops and had seriously hampered summer-fallowing, with the result that nearly all classes of fields were covered with Russian thistle. This was flowering at the time of flight. Noctuidæ feed freely on these flowers, but the favourite food plant in Alberta appears to be golden-rod, which flourishes in restricted areas of waste land. Experiments with traps placed in these golden-rod areas showed that fermenting molasses, when used alone, was not sufficiently attractive to overcome the predilection of the moths for these flowers. With the addition of eight drops of amyl acetate per quart of the solution, both sexes of *P. orthogonia* could be attracted to feed on the bait despite the close proximity of a strong counter-attractant.

The abundance of feeding is very variable, and we did not obtain very definite data upon the probable catches made by our experimental traps. At night there were frequently as many as 20 to 30 moths, of which over 50% were female, feeding on a single trap at a time when very few were attracted to troughs of molasses. By day males were found feeding at all hours, though they were most abundant between the hours of two and five p.m. Females appeared less frequently in the morning and were seldom seen in numbers till about 4 p.m., by which time they visited the traps freely and were nearly as numerous as the males on golden-rod blossoms.

We did not discover that quassia would retain the majority of moths that visited a trap till too late in the season for this to supply us with many data.

In the laboratory, however, and with a few bottle traps, we found that the deterrent effect of quassia is very slight and that it is readily overcome by the addition of a little saccharine to the bait.

The effect of quassia on moths is very variable, and it cannot be predicted for the individual. Moths captured feeding on flowers, were offered a choice of formulæ. Those containing quassia and saccharine were preferred to straight molasses. This was also demonstrated in the field. At a strength of two ounces to a quart of solution quassia kills about 65% of all moths that feed on it. In some cases death is rapid, and within ten minutes of feeding either sex of *P. orthogonia* loses all power of locomotion, lies on its back and response to stimulation becomes continually less apparent till it ceases entirely. Death in such cases appears to be gradual and progressive. In other cases moths feed freely on the bait for a few minutes and suddenly flop around the receptacle as though in great pain, till sudden death puts an end to their activity.

On the other hand some 35% of the moths which have imbibed quassia solution, sometimes more extensively than have those which die, become either very sluggish or quite inactive a few minutes after feeding and they may remain in this condition for two or three days. Sometimes females, which have been quite inactive for over 24 hours, will laboriously struggle to their feet, lay a few eggs, and relapse into inactivity. Recovery in other cases appears to be complete, and since it permits oviposition, we have retained the use of fly pads in addition to quassia. Our experiments indicate that very few moths will recover from the effects of the latter before they succumb to the arsenical poison of the former.

At present our poisoned bait formula, therefore, consists of:—a 10% solution of cane molasses, the diluent being water in which quassia chips have been soaked overnight at the rate of two ounces to the quart. In each bottle of this solution is inserted one fly pad, sufficient saccharine to cover a Canadian 5 cent piece (1 gram), and eight drops of amyl acetate.

This formula undoubtedly can be improved considerably both as regards its attractiveness and poisoning quality. As it stands, all of the materials, with the exception of amyl acetate, which is not essential, can be obtained in any village.

The present retail cost of materials for a dozen traps, including the bottles, is approximately $2.65.

We have no definite data as to what distribution of traps will give the greatest returns for money expended, but believe that one to every ten rods of fencing around a field that is free from flowering weeds should be sufficient to reduce an outbreak very materially. On weedy fields subsidiary posts erected in the field might be necessary.

Poisoned molasses traps give more promise for controlling noctuid moths than do other methods tried because:—

1. They require attention, at the most. once a week.
2. Females are attracted as readily as males to bait and they are usually gravid.
3. With a combination of quassia and arsenic very few females that feed on the bait are able to lay eggs subsequently.
4. Quassia is non-poisonous to stock and is distasteful to them.
5. Individual traps attract more moths than do corresponding troughs of molasses.
6. All materials are cheap and are readily obtainable anywhere.
7. The bait is effective by day as well as by night and its efficacy is not reduced by moonlight.
8. Climatic conditions affect the traps very little.

THE WESTERN WHEAT-STEM SAWFLY IN CANADA.

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The Western Wheat-stem Sawfly—*Cephus cinctus* (Nort.) is a native insect that has become a pest because of the introduction of cereals such as wheat and rye. It originally lived in various native grasses such as *Agropyron, Elymus, Calomogrostis* and *Bromus*. While confined to these food plants it fluctuated from year to year according to the prevalence of flowering stems in which the larvæ lived. or to the presence of natural enemies. These two factors usually kept the insect well in hand until the grains mentioned above were introduced when abundance of new food became available. The sawfly, however, was slow in adapting itself to the new conditions and it was only towards the beginning of the present century that it finally became established in our grain fields. Since then it has steadily increased. To begin with, only the edges of wheat fields were attacked by the overflow from native grasses but gradually the adults flew further afield until, eventually, whole fields became infested and in some instances more than eighty per cent. of the wheat stem was cut by the larvæ. Both Saskatchewan and Manitoba suffered heavy loss in 1921, the total amounting to several million bushels and in south-west Manitoba exceeding twenty-five per cent. of the crop. The insect is steadily spreading and so far as we can judge, it will continue to do so until the entire spring wheat area is invaded.

Natural Control. The Wheat-stem Sawfly appears to have been kept well under control in the past by various natural factors which include natural enemies and meteorological conditions. Of the natural enemies Hymenopterous parasites seem to have played the leading part though there was, at times, quite a high death rate brought about by an unknown cause apparently of a fungus origin. The rainfall has always been an important factor because it has controlled the insect's food supply by governing the number of flowering stems in which the larvæ live.

The sowing of cereals over large areas of country has entirely upset the control conditions that previously existed. Factors that were then of the utmost value have been almost eliminated, the available stems of grain having done away with the check of limited food supply, while for reasons that are only beginning to be understood, the parasites so prevalent in grasses are unable to follow their hosts into the grain fields. On account of these conditions the sawfly has practically a free hand, and as a result it has spread over large stretches of country.

Parasites. Two hymenopterous parasites were reared by Ainslie in North Dakota and Utah namely *Microbracon cephi* Gahan and *Pleurotropis utahensis* Crafd. The same insects have been taken by us in Manitoba, while two others *Eupelmus allynii* French and a species of *Eurytoma* also are present in some numbers. All these parasites are natives of the country and they occur wherever infested grasses are met with. Cultivated grasses which are attacked by the sawfly have proved equally suitable to the parasites, but when it comes to fields of grain there is a sudden check which practically leaves the sawfly free of enemies.

The sudden check of the parasites when they come to grains is the most important and interesting of the problems before us and a number of details will have to be supplied before we can ultimately define what the causes are that bring about this change. There are, however, several significant facts to be taken into consideration; firstly, both *Eupelmus* and *Eurytoma* emerge in large numbers during August and September, the *Cephus* larvæ being at this time in their winter quarters in the stubs below the ground where it is doubtful whether the parasites would find them. If this is so, in what do the above parasites oviposit during the Autumn months or do they hibernate and remain inactive until the following July? If the parasites breed in their hosts then they would obviously have to return to the plants harbouring them and consequently leave the grain fields. This might well account for the insects' abundance in wild grass lands, but it would only partly explain the problem before us. We know that *Microbracon* hibernates in cocoons, either as larvæ or pupæ, to emerge as adults sometime during the following spring, in this case there being probably no secondary host. We must, therefore, look to other causes for the absence of this parasite in infested grain fields.

Turning to *Pleurotropis utahensis* we find that this parasite is late in maturing, and that it is even more restricted in its habits than *Microbracon*. It has been found in most of the *Cephus* infested grasses and once in fall rye, but not in wheat. It was comparatively rare in 1921.

The third parasite *Eupelmus allynii* (French) is a very general one, being known to attack various other grass-infesting insects, but it has not previously been recorded from *Cephus*. Our specimens emerged in September. The fourth *Eurytoma* sp. appears in August. It has been reared from both grain and grasses as a host of *Cephus*.

The second point is that sawfly-infested winter rye is quite thickly inhabitated by parasites when said rye is found growing as a volunteer crop amid other grasses and weeds of various kinds, but not when it is growing alone.

Thirdly, infested wheat and spring rye are both found to contain *Microbracon* and *Eupelmus* around the edges of fields next to grass areas but very rarely towards the centres of fields. All of which points strongly to the parasites having their home among the grasses, in which they find necessary factors not present in the growing grain. We are still at a loss to know what these factors are, but it is significant that parasites of sawfly larvæ may be found in both grain and grasses when those plants are growing together on land that has been left uncultivated.

Climatic Control. It is noteworthy that there is a marked fluctuation in the yearly development of the sawfly, even though the species has gradually become more numerous. In North Dakota, for instance, the infestation of 1921 did not apparently exceed that of 1917, whereas had the insect developed at what

might be termed a normal ratio it must have wiped the wheat crop out of existence. We have noted similar conditions in Manitoba more than once, which have led us to suspect that meteorological factors play an important part in the development of the sawfly. This has been still further borne out by a survey of the province and by an examination of the reports issued by the Manitoba and Saskatchewan governments, together with those of the Manitoba Free Press. We found in these surveys that the greatest prevalence of *Cephus* followed very closely the areas of least rainfall, and that where the moisture was ample the injury fell to a marked degree. This fluctuation, apparently due to humidity, was even well marked over local areas. It was also apparent that the low, moist, portions of a field were much less infested than the high drier parts. More data is necessary before definite conclusions can be arrived at but judging from our experiments, rain in itself is not harmful except during the adults' life. It would seem, therefore, that the cause of the greater immunity lies in the quicker growth, this in its turn perhaps providing an excess of sap that is detrimental to the sawfly larvæ. In any case the facts of this flutuation are hopeful because they indicate that with the passing of dry seasons the sawfly menace may become less acute.

Remedies. The remedies for the Western Wheat-stem sawfly are entirely cultural, and the most important of them consists of ploughing down the infested stubble any time between August 1st and June 5th of the following year. In order to be thoroughly effective the ploughing must be well turned so that there is no overlapping edge to the furrows, and it should be not less than six inches deep. A wide furrowed plough is better than a narrow one for this purpose. Fall ploughing will pack during the winter, but that done in the spring should be packed by machinery.

In addition to the destruction of larvæ by ploughing a good deal can be accomplished by sowing immune, or partly immune, crops. Oats, for instance, are perfectly free from attack; barley, owing to its rapid growth escapes, with small injury, while winter rye is able to withstand the insects' effort to a marked degree and, on account of its early ripening, is cut before loss occurs. Indeed, there are indications for the belief that winter rye may prove one of the most important checks to the development of the sawfly owing to the fact that it is often heavily infested but the sawfly larvæ are usually unable to mature in it. Moreover, even should they develop normally, the early ripening of the rye enables it to be harvested before the larvæ can get below the point where the straw is cut by the binder and as a result they perish.

Trap Crops. We have noted that volunteer wheat on land intended for summerfallow is often a great attraction for adult sawflies that have emerged in the vicinity. On one such plant we counted 14 of these insects at rest, while on another three were attempting to oviposit at the same time. It is probable, therefore, that a single plant of this nature might be the receptacle for many eggs, especially as it is not uncommon to find the remains of two or more larvæ in one stem. For this reason we believe that a narrow strip of thinly sown wheat round the edges and across the middle of a field intended for summerfallow, might attract and be the means of destroying a large number of these insects.

Crop Rotation. Should the sawfly continue to maintain its present proportions or increase still further, then it will be necessary to consider more drastic measures of control and make an initial sacrifice in order to reduce the pest sufficiently to make wheat growing profitable. To do this farmers in in-

fested districts will have to discontinue wheat and spring rye growing for a year, and in their place sow crops that are free, or nearly so, from the insects' attack. Crops that can be recommended for this purpose are: Oats, winter rye, barley, corn and any broad-leafed vegetable or fodder plant, including flax.

Grains That Suffer Most. Spring wheat is the most severely infested, with spring rye a close second. Durum wheat, according to Ainslie, suffers almost as much as common wheat, and our own observations made over restricted areas, bear out this contention. Some of our correspondents in North Dakota, however, claim a much greater immunity for durum than other wheats, but it is necessary to know more about the conditions under which it was grown before we can reach definite conclusions as to its utility. Speltz also is badly infested

As a general rule, it seems that quickly maturing crops are safer to sow than late ones, and in this respect it might be worth while testing one or more of the new early wheats. A winter wheat hardy enough to stand our climate would probably prove an ideal factor in overcoming the sawfly depredations.

The Destruction of Grasses. It was C. N. Ainslie who first questioned the utility of destroying infested grasses owing to the fact that these harboured large numbers of parasites. The problem is a moot one and requires careful study. In 1921, we found Brome grass (*B. enermis*) infested with sawfly to the extent of 70 per cent but from these infested stems not more than 5 per cent of the larvæ reached maturity and of those that cut and plugged the stems, not more than 6 per cent survived. In other words there was a death rate of 94 per cent very largely through parasites. To cut the grass in July for the purpose of destroying the larvæ would, under such circumstances, be of no practical value, and might do considerable harm. Judging from our work of 1921 other grasses mature a larger number of sawflies than does brome. A field of *Agropyron tenerum*, for instance, showed a parasitism of about 35 per cent in a total infestation of 72 per cent, and practically the same death rate was recorded in *Agropyron richardsonii*. In these there would seem to be an overflow of adults sufficient to infest nearby crops, leaving their enemies to attend to those that remained to breed in the grass; whereas if these grasses were cut early in July all the sawfly larvæ would be killed while the parasites which had not yet oviposited might be induced to fly to infest hosts in the growing grain.

From the evidence so far obtained we believe Brome grass can safely be left to rear sawfly parasites, but that other grasses should be cut before the middle of July to kill the sawfly larvæ infesting them.

Hardiness of Larvæ. The larvæ are capable of great endurance, and for that reason we have been unable to discover any practical method of destroying them in the fall. Immersing the infested stubs in water for three days merely produced a torpor which passed off after a few hours. Exposing the stubs to all the vicissitudes of autumn, winter and spring on top of the ground was also of no avail. Burning the stubble is likewise abortive.

In conclusion, it is my pleasure to acknowledge the help I have received from Mr. C. N. Ainslie, both personally and through his publication. I am indebted to Mr. W. R. Walton for his kindness in arranging for the determination of parasites, and to Mr. M. P. Tullis of the Department of Agriculture, Regina, for information concerning the sawfly outbreak in Saskatchewan. Finally, I have to acknowledge the assistance of my fellow worker, Mr. P. N. Vroom, who has been with me during the last two summers.

TABLE SHOWING PERCENTAGE INFESTATION OF VARIOUS GRASSES AND MORTALITY AMONG THE CEPHUS LARVÆ.

WINTER RYE.

Sown in 1920 but not cut; 21 per cent. of stems not infested.	
Larvæ matured	19
Larvæ dead	81
Volunteer crop among other grasses; 19 per cent. of stems not infested.	
Larvæ matured	11
Larvæ dead; cause unknown	78
Larvæ parasitized	11

BROME GRASS (*B. Enermis.*)

Collected in August; 12 per cent. of stems not infested.	
Larvæ mature	23
Larvæ dead, cause unknown	37
Larvæ parasitized	40
Collected in October; 14 per cent. of stems not infested.	
Larvæ mature	8
Larvæ dead, cause unknown	44
Larvæ parasitized	48
Collected in late October; 13 per cent. of stems not infested.	
Larvæ mature	2
Larvæ dead, cause unknown	44
Larvæ parasitized	54

Agropyron tenerum

Collected in October; 32 per cent. of stems not infested.	
Larvæ mature	42
Larvæ dead, cause unknown	20
Larvæ parasitized	38

Agropyron richardsonii

Collected in August, 24 per cent of stems not infested.	
Larvæ mature	40
Larvæ dead, cause unknown	19
Larvæ parasitized	41
Collected in October; 21 per cent. of stems not infested.	
Larvæ mature	32
Larvæ dead, cause unknown	7
Larvæ parasitized	61

LYME GRASS (*E. canadensis.*)

Collected in August; 24 per cent. of stems not infested.	
Larvæ mature	30
Larvæ dead, cause unknown	34
Larvæ parasitized	36
Collected in October; 16 per cent. of stems not infested.	
Larvæ mature	26
Larvæ dead, cause unknown	37
Larvæ parasitized	37

The above tables are compiled from the examination of several hundred stems in each instance.

THE EUROPEAN CORN BORER (*Pyrausta nubilalis* Hubn.): LIFE HISTORY IN ONTARIO.

H. G. CRAWFORD, ENTOMOLOGICAL BRANCH, OTTAWA, AND
G. J. SPENCER, ONTARIO AGRICULTURAL COLLEGE, GUELPH, ONT.*

The apology for presenting so incomplete a study rests upon the fact that this is a recently introduced and already widely distributed insect, spreading with great rapidity and capable of doing very serious damage. Consequently, its reaction to Canadian conditions where it has demonstrated its ability to increase over 300 per cent. in a single year, and where its presence results in severe damage to our corn crop, cannot but be of interest and value.

* A joint progress report of the life history studies carried on at the laboratories of the Dominion and Ontario Departments of Agriculture in the season of 1921.

The larvæ of the European corn borer normally winter in corn stalks or stubble, either standing or lying on the ground. Almost any other not absolutely submerged shelter, from a corn leaf in the ground to the centre of the cob in the crib, will serve for successful wintering. In the spring as soon as the weather warms up, the larvæ do a variable amount of boring and possibly feeding in preparing the pupal chambers from which an outlet for the escape of the adult is made.

Pupation in the field in 1921 began on May 27th being practically complete by June 22nd, though one or two larvæ were taken in the following week. Adults began to emerge June 16th, and by July 4th 90 per cent. of the moths had issued, the balance following more slowly; a small percentage failed to develop.

In the laboratory where the whole process of development was delayed, pupation did not begin until June 6th, ten days later. The males began to pupate 7 days before the females, outnumbering them until just before the end of the pupation period. Similarly with the moths the males began to emerge about 4 days before the females, and exceeded them in number until just before the end of the emergence period, which extended from June 29th to August 12th. The duration of the pupation period of the males varied from 8 to 18 days, an average of 12.33 days, while for the females it was distinctly less, from 7 to 17 days, an average of 11.29. At the laboratory located a little further inland the average durations, however, were 12 days for males and 10.19 for females, a distinctly more rapid rate.

The male moths lived in confinement for from 6 to 21 days, averaging 13 days, while the females lived for from 10 to 31 days, averaging 17.4 days, with a pre-oviposition period (20 females) of from 3 to 9 days, averaging 4 days. After this period they laid from 95 to 988 eggs per female, at the rate of from 12-231, an average of 75.3 eggs per day, in masses containing from 1-64 eggs, an average of 33 per mass. All of the eggs kept under observation hatched. The duration of this stage was from 3 to 8 days, averaging for the period between June 28th and August 2nd 4.71 days.

In the field a study of the incidence of egg laying on corn planted on May 31st in a field adjacent to the northern margin of an old corn patch of 1920, at this time in oats and barley, was started. The moths began to emerge on June 18th from the old stubble in the standing grain, and eggs were not found until July 1st when 5 masses were secured from 100 plants, though a most careful search was maintained in the intervening period of 14 days; on July 3rd 15 masses were secured on approximately 200 plants, at which time egg laying was becoming general, and some masses were observed to be hatching. The corn at this time was from 9-20 inches high. No eggs were laid until the corn averaged about 15 inches in height. In the interval the adults were, without doubt, flying southwest to another field planted on May 18th which, at this time, was markedly in advance of the field under observation in development and finally suffered a loss of 65%. The field under study in the north, however, was but 63.2% infested and the loss would not exceed 5%.

The first eggs taken in the season, however, were found in the field June 21st, and by July 15th hatching was general, and the infestation was shown up very clearly on the unrolling leaves where the newly hatched larvæ were feeding at the base. The evidence of attack became clearly marked in the first week in July, and by the second week the tassels were falling on the early planted flint

and sweet corn. As the plant increased in length and the larvæ on the rolled up leaves were exposed to light, they bored into the stalks, which by the end of July in the early planted corn began to break over.

By the third week in July in the very early sweet corn, and to a much less extent in the flint, the majority of the larvæ were full grown. At that time a very small second brood developed in the very earliest planted sweet corn, involving but a fraction of one per cent. of the larvæ. In this sweet corn 10 pupæ in all were collected between July 21st and 26th and 4 pupæ were secured from larvæ collected at the same time. From these pupæ, after a period of 13 days, 2 male moths and 1 female moth were reared. The female laid fertile eggs, the larvæ from which established themselves on a corn plant in an experimental cage. The only other evidences of the second brood were 1 pupa and 2 female pupal cases from the earliest flint corn, an adult male in late July, an egg mass found on August 9th and a few 3rd instar larvæ taken late in August.

The larvæ in all varieties of the later corn, matured distinctly later on the average and showed no signs of developing a second brood, but prepared for winter about the middle of August and where not disturbed, would probably not move until spring. At harvest time about the last of August and in early September in a flint corn field showing 70% total loss, the estimated number of larvæ per acre was 191,800. Of these 27% were within 12 inches of the ground and a four inch stubble carried 28,079 larvæ, 6.82% of the larval population.

There was no movement of any import in the standing field corn in the fall, the distribution in the middle of October being practically the same as at the end of August. However, there is a noticeable movement outward and downward in the stalks in shock, but none of any importance from the shock to the ground and neighbouring stubble.

The date of sowing was closely correlated with the degree of infestation, the larval population and the total loss both in experimental and field conditions. In general, corn sown before May 24th was either practically ruined or suffered severe loss; that sown between May 24th and June 1st was heavily infested, but suffered relatively less or but slight actual loss, depending of course upon the type of corn; while the corn sown after June 1st, although in some cases showing a fairly high percentage of infestation carried few larvæ and practically no loss except in the case of sweet corn. Thus, on one farm of three corn patches within 100 yards of each other, the sweet corn sown April 25th carried a larval population of 234,200 per acre with a loss of 100%; sweet corn planted June 1st developed an infestation of 75% and carried a larval population of 80,000 per acre with a loss of 20%; while flint (smut nose yellow) planted May 22nd, only carried 54,400 per acre, a stalk infestation of 67% and a total loss of not more than 10%. The sweet corn here doubtless protected the flint by attracting a large number of the moths.

In the experimental plots the effect of the date of planting shows up most clearly, as can be seen in the tabulation below, though here the loss was slight and the larval population meagre, the corn all being planted after May 24th.

Variety	Date	Per cent of stocks infested	Per cent of stocks broken over	Per cent of cobs infested
Golden Bantam sweet corn	May 24	30.18	16.93	16.9
	May 31	34.4	20.00	2.14
	June 3	15.33	7.66	1.89
	June 9	7.52	4.30	1.19
Dent Corn Early Leaming	May 31	24.30	69.44	.4
	June 3	13.45	1.50	.99
	June 9	8.11	1.62	1.17
Golden Glow	May 28	53.42	17.81	2.12
	June 3	21.08	9.73	.99
	June 9	7.44	4.65	.63
Wisconsin No. 1	May 28	54.44	16.14	2.65
	June 3	15.61	5.35	1.29
	June 9	3.66	2.44	1.16
Flint Corn Salzers' North Dakota	May 28	70.9	20.77	13.31
	June 3	10.62	10.12	3.77
	June 9	14.74	2.17	4.11
Compton's Early	May 28	82.4	50.00	10.47
	June 3	44.14	17.79	9.68
	June 9	15.10	4.17	3.45
Smut Nose Yellow	May 31	30.14	11.41	6.10
	June 3	28.57	14.29	4.11
	June 9	3.45	.86	1.89

The larval population in badly infested fields attained enormous magnitudes; a dent corn field sown May 18th carried an estimated total of 294,152 per acre, a flint field sown on the same day suffered a total loss of at least 65%, supported a total of 258,400 per acre and left when cut, in the stubble (less than 4 inches in height) and the crop refuse, a residue of 43,487 caterpillars going into the winter.

In general, all things considered, there seems to be no marked preference for any particular type or variety of corn; the severe loss associated with sweet corns and the flint varieties being due to the early planting, the ability of the larvæ to establish themselves and the small dimension of the stalks. The obvious relatively slight loss in the dent corns is due to the later planting, its vastly greater bulk and its harder and coarser texture preventing a large proportion of the larvæ establishing themselves in the first instance.

The Infestation of Plants Other Than Corn.

About the middle of July in the very severely infested fields of early sweet corn, to a less extent in severely infested flint and to a very slight extent in dent corn except in the one severely injured field, the nearly full grown and full grown larvæ become restless. At this time large numbers of them leave the now breaking, shrivelling and drying corn stalks and carry on an apparently haphazard migration throughout a period of about two weeks. In the course of this migration as many as 24,400 larvæ per acre found their way into the weeds in one field of sweet corn sown April 25th. Others doubtless returned to the corn plants. Considerable feeding was done in the larger weeds, the pigweeds, the lamb's quarters and barnyard grass breaking over in a high percentage of cases. The barnyard grass was infested as high as 88% and in one instance a plant with 26 stems was found to contain 17 larvæ. The weeds infested in this field in the order of frequency were: barnyard grass (*Echinochloa crus-galli*, Beauv.), redroot pigweed (*Amaranthus*

retroflexus L.), yellow fox-tail (*Setaria glauca* Beauv.) Lamb's quarters (*Chenopodium album* L.), tumble weed or Russian thistle (*Salsola* var. *tenuifolia* G.F.W. Mey), green fox-tail (*Seteria viridis* Beauv.), Lady's thumb (*Polygonum persicaria* L.), wild buckwheat (*Polygonum convolvulus* L.) ground cherry (*Physalis heterophylla* Nees.); other weeds present but not infested were: purslane, Canada thistle, bitter sweet, milkweed and crab grass. However, throughout the district of the weeds found to be infested in addition to the above the following can be listed: orchard grass (*Dactylis glomerata* L.), Canada thistle (*Cirsium arvense* Scop.) wild sunflowers (*Helianthus* sp.), blue weed or vipor's bugloss (*Echium vulgare* L.), ragweed (*Ambrosia artemisiifolia* L.); mullein (*Verbascum thapsus* L.), goldenrod (*Solidago* sp.), old witchgrass (*Panicum capillare* L.), yarrow (*Achillea millefolium* L.), burdock (*Arctium minus* Bernh.).

In cultivated crops and flowers larvæ have been secured in the field feeding on dahlia, geranium, aster, golden glow, beets, mangolds, tomatoes (fruit), beans, oats, squash, vines, broom corn, sudan grass, early amber sugar cane, Hungarian grass and Mann's Wonder sorghum.

No success was achieved in establishing larvæ upon a long series of common weeds by attaching eggs laid upon a slip of corn leaf. The eggs hatched but the larvæ rarely were able to infest the plant. In a series of experiments with paired adults caged over 35 common cultivated vegetables and flowers the larvæ in very small numbers established themselves upon mangels, potatoes, celery, cauliflower, peas, beans, peppers, eggplant, radish (gone to seed) salvia and aster. Summing up, however, the entire infestation in the open of plants other than corn, with the exception of the dahlias, and possibly barnyard grass and Mann's Wonder sorghum was due entirely to the migrating larvæ. These larvæ, particularly in the weeds, together with those in corn stalks, stubble and refuse have gone into the winter in very large numbers with every prospect of coming through successfully and giving rise to an increased infestation in 1922.

THE SPREAD OF THE EUROPEAN CORN BORER IN SOUTHERN ONTARIO.

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When the European Corn Borer was realized to be a serious pest, that is, in the summer of 1918, the Canada Department of Agriculture took steps to warn the general public of the danger of introducing this insect into Canada, and also carried on investigations to determine the amount of corn, and other products likely to harbour the borer, that had been imported into the Dominion from the infested districts in Massachusetts. As a result of these investigations scouting for the pest in the maritime provinces was carried on during the summer of 1919.

With the discovery of the insect in western New York in the fall of that year, the attention of the Department was directed to the possibility of the pest having spread into the province of Ontario. Some scouting was done in Welland County and along the Niagara River that fall, but was soon discontinued on account of the lateness of the season and the unfavourable climatic conditions. Plans were made, however, to resume the scouting in this territory the following summer.

On August 10th, 1920, the first infestation was found near Lorraine Station, Humberstone township, Welland county. The larvæ were small in size and were collected in a field of ensilage corn. A preliminary survey of the infestation showed

that it was exceedingly light, but widely scattered. On August 22nd, a farmer living near St. Thomas, Ontario, submitted some samples of larvæ found in his field corn which were readily identified as caterpillars of the European Corn Borer. A prompt examination of this district showed the degree of infestation to be much greater than that in Welland county.

With the co-operation of the Ontario Department of Agriculture extensive scouting was started at once. The extent of the infestations exceeded by far anything that had been anticipated, and as the season was advancing rapidly, the scouting had to be carried on at undue speed.

At the close of the scouting work it was found that there were two distinct infestations in southern Ontario, the first centering about Welland county, and the second centering about Middlesex and Elgin counties. During the scouting seasons one hundred and five townships in thirteen counties were examined, thirty-five of which were found infested by this insect. The area found infested covered approximately 2,780 square miles.

The season of 1921 was unusual in several respects, the continued hot dry weather in June and July causing all vegetation to develop with abnormal rapidity, and it was necessary to start the scouting work two weeks previously to the time originally planned. The scouting was actually started on August 1st and completed by October 3rd. During this period one hundred and ninety-seven townships were scouted, of which sixty-five were found infested; these added to the thirty-five townships found infested in 1920 make a total of one hundred townships infested to date. The area found infested by the scouting this past season is approximately 4,910 square miles, which, in addition to the 2,780 square miles infested in 1920, make a total of 7,690 square miles now infested by the European Corn Borer in this district.

The following townships in Ontario are infested at the present time: Oakland, Brantford, Burford, and Onodaga in the county of Brant; the seven townships in Elgin county; Gosfield South, Mersea and Pelee Island in Essex county; nine out of ten townships in Haldimand county, the tenth township was not scouted on account of the small amount of corn grown, but was included in the quarantine; Goderich, Hay, Stephen, Tuckersmith and Usborne in Huron county; Gore of Camden, Harwich, Howard, Orford, Raleigh, Romney, Tilbury East and Zone in Kent county; Brooke, Euphemia and Warwick in Lambton county; Clinton, Grantham, Louth and Niagara in Lincoln county; the fifteen townships of Middlesex county; the eight townships in Norfolk county; Pickering in Ontario county; the eleven townships in Oxford county; Blanshard, Downie, Easthope North, Easthope South, Ellice, Fullerton, Hibbert, Logan and Mornington in Perth county; Waterloo, Wilmot and Woolwich in Waterloo county; the eight townships in Welland county; Guelph in Wellington county; and Lancaster in Wentworth county.

The degree of infestation is heaviest in Elgin and Middlesex counties, and on the outer edges of the infested area borers were very hard to find.

It is also to be hoped that the past season was an unusually favorable one for the European corn borer, for there has been a general spread from practically all points of the 1920 area, but the most noticeable spread has been north, northeast and east.

The scouting work of 1920 showed that there are two distinct infestations in the province at this time, and the results of this past summer's work appear to bear out that conclusion. This season the scouts had no difficulty in making several collections of larvæ in the townships adjacent to the western end of the old

Welland infestation, and in townships adjacent to the eastern end of the Middlesex and Elgin infestation, whereas great difficulty was encountered in locating borers in the centre townships, that is, between the two infestations.

The infestation is exceedingly light on the extreme western edge of the infested area, that is, in Kent and Essex counties, in fact the only collections in the townships found infested in these counties this year, were taken along the main highway which runs east and west. The spread into this area may be due to artificial spread, either from carriers such as automobiles, or from infested corn refuse washed up on the shore of the lake, as the highway is adjacent to the lake in this district.

The discovery of the borer on the Lake Huron shore was made late in the season, and only a single collection of larvæ was taken in the township of Gooderich. As the neighboring township was found to be lightly infested, it appears as if the infestation in Goderich township may be due to an exceptionally long flight of the adult moths.

The only isolated infestation was found in Pickering township, about twenty miles east of Toronto and bordering Lake Ontario. The collection of larvæ was made in the town of Pickering. Although the entire township, as well as the neighboring townships were carefully re-scouted, no further collections were taken The nearest infestation to this point is in Lincoln county approximately forty-five miles away.

Upon the completion of the scouting season in 1920, a domestic quarantine was placed on the infested area prohibiting the movement of corn stalks, broom corn, green sweet corn, roasting ears, corn on cob and corn cobs from the area placed under embargo. Exception was made, however, to seed corn on the cob consigned to recognized fairs and exhibition, which were inspected immediately upon arrival at destination. This quarantine was amended in May 1921, and three additional amendments were passed during the summer and early fall, quarantining the additional townships found infested.

In order to bring the attention of the general public to this embargo, warning notices were placed at the intersection of every road leading out of the quarantined area. In addition, large canvas banners 2½ feet by 11 feet were stretched across the main automobile highways leading out of the district. Automobiles were stopped and searched on the main highways on Sundays and holidays for evasions of the quarantine. A careful watch was also kept on all markets and fall fairs. It was found that live stock men were in the habit of taking corn stalks as fodder for their live stock exhibits at the larger shows, thus making it necessary to station inspectors at such fairs.

Although no direct evidence has been secured as to the origin of the outbreak of the European corn borer, this may have been due in Elgin and Middlesex counties to importations of broom corn from Europe. From correspondence it has been learned that all Canadian broom manufacturers prefer to use broom corn grown on this continent, but in 1909-10 there was apparently a shortage of this product and one firm at least, located in this district, imported large quantities of corn from Central Europe.

THE IMPORTED ONION MAGGOT IN BRITISH COLUMBIA WITH NOTES ON ITS LIFE HISTORY AND CONTROL UNDER "DRY BELT" CONDITIONS.

R. C. Treherne, Dominion Entomologist in charge for B.C., and M. H. Ruhmann, Assistant Provincial Entomologist.

The imported Onion Maggot, *Hylemyia antiqua,* (Meigen), is known to have been present in British Columbia for many years. William Couper, writing in the 1875 Report of the Ontario Entomological Society, states that this species "is a terrible pest throughout the extent of the Dominion." Inasmuch as this date was ten years before railway connections were made with the Prairies and only five years after British Columbia entered Confederation, the record is of interest. Dr. James Fletcher in his first Annual Report as Dominion Entomologist in 1884 records the Onion Maggot as having been very injurious in many districts in Canada. His correspondent, Mr. Homer of New Westminster, in this year, however, makes no mention of the Onion Maggot in British Columbia. In the second Annual Report for 1885 the Onion Maggot is dealt with in detail and particular attention is drawn to the serious attacks of this insect in Ontario and Quebec, but no reference is made to British Columbia. In view of the lack of published data, it is possible that this insect did not occur in British Columbia at this early date. This belief is based on the lack of references to British Columbia in Dr. Fletcher's Annual Reports between the years 1885 and 1903. In the 1904 report, however, we find the first direct suggestion that this insect occurred in British Columbia. It was not until the year ending 1909 that direct proof that this insect occurred in British Columbia was received, according to these same reports.

During the past ten years reports of injuries caused by this insect have been common in the humid transitional areas of the Pacific Coastal region, but they have been confined usually to garden and small vegetable plantations. In the arid transitional areas or in the so-called "dry belt" of the province, onion growing on a commercial basis has been in vogue for about eight years, but the first specimens bred to maturity were obtained in 1912. In 1914 this insect had become very injurious and extremely numerous especially in the north end of the Okanagan Valley. The acreage in onions during the past few years comprises between 500 and 800 acres at the two settlements of Vernon and Kelowna. During 1914 and 1915 some growers were literally forced to abandon commercial onion growing and to-day are undecided as to the value of the crop with this insect prevalent in the country.

In the year 1917, in the Okanagan Valley of British Columbia, the demand for information as to the control of this insect became so insistent that the senior author decided that some action was necessary. Consequently in the year 1918, review of the literature on this insect under North American conditions was undertaken. A surprising lack of detailed information both as regards the life-history and the control was revealed. The sodium arsenite and molasses bait as a remedial measure was receiving prominence at the time and while several authors were subjecting this method of control to certain criticisms, the method seemed to possess the weight of authority behind it.

We were unable to conduct any material investigations in 1918, owing to the pressure of other duties, but we felt justified in advising our growers to apply the sodium arsenite bait using the open "pie dish" method of application, believing

this method to be better suited to our low humidity conditions than the broadcasting of the bait in coarse drops across the plantations. Several leading growers adopted this method in 1918, and without exception each one reported a very serious loss by the onion maggot, the poisoned bait apparently having failed to influence the degree of infestation. An average field of three acres, for instance, grown under the ordinary cultural methods and treated with the bait in open "pie dishes" yielded only 900 lbs. when a total crop of sixty tons should have been received. Twenty "pie dishes" were used to the acre and they were kept continually moist with bait renewals for the best part of six weeks commencing at the time when the seedling onions were three inches high.

These results severely tested our faith in the poisoned bait method of control under irrigated conditions, but with no information as to the habits of the fly under such conditions we decided to test the bait more fully in the following years. Hence during 1919, 1920 and 1921, certain life history notes have been obtained at Vernon, B.C., and we take pleasure in presenting them in summarized form together with further results on control operations.

Life History.

The individual egg stage lasted from 3 to 8 days. The number of eggs laid in clusters, evidently the product of an individual female's deposition during the height of the spring oviposition period, varied from 3 to 27 on seedling onions and from 11 to 59 on volunteer onions, growing from the remains of the previous year's crop. Solitary eggs were common, clusters of 10 to 15 eggs were frequent, but clusters of 5 to 7 eggs were most usually seen. The most interesting records, which in principle were ordinary, were 59 eggs laid in the soil in a single cluster two inches away from the nearest plant and 39 eggs laid in a cluster on a leaf three inches above the soil surface.

The individual larval stage varied from 14 to 29 days, during spring and early summer, while the puparium stage lasted approximately the same length of time. Puparia were usually seen between the roots of the plants during the summer but, later in the season and in stored onions, pupation frequently occurred between the outer fleshy layers of the bulb or beneath loose epidermis.

Adult male flies, bred, held and fed in confinement lived from 3 to 13 days and females from 3 to 33 days. Sweeping and breeding records indicated that the sexes were about evenly divided throughout the year.

During the past three years the first adults to develop from over-wintering puparia in the field appeared at the same time i.e. between May 10th and May 15th, at the time when the seedling onions were 1 to 1½ inches high. In the same three years oviposition commenced in the field between May 16th and May 19th and continued into September or until the crop was harvested.

Second generation adults, developing from the spring deposition of eggs first made their appearance under field conditions on July 7th, 1919; on June 29th, 1920, and on June 17th, 1921, and in each year continued to appear until late in August. Second generation eggs, larvæ and puparia were present in the field during July, August and September.

Third generation adults, developing from eggs laid during the first two weeks of July appeared, under field conditions, between August 13th and August 20th and deposited eggs, a few resulting puparia overwintering.

While the studies necessary to prove the existence of the third generation were successfully negotiated, we are unable to give the exact percentage of second generation puparia that produced third generation adults. Suffice it to say that,

in 1920, from material bred in sequence from eggs laid in May and recovered during July, 55% of the July second-generation puparia hibernated while 45% emerged as third generation adults in mid-August. Second-generation puparia, of course, were being produced during August and September, hence only a fraction of the second generation really produced a third generation.

From our records we are able to state, therefore, that two generations are complete at Vernon, B.C., while in certain years, a partial third generation occurs.

Nature of Injuries.

While adults were extremely active on the wing on bright sunny days and very sluggish on dull, cloudy days, weather conditions did not seem to affect the rate or degree of oviposition per diem. Eggs were laid most frequently on the strongest growing seedlings in the early spring, and at this time of the year oviposition nearly always occurred at or just below the surface of the soil on or in the vicinity of a plant. After the end of June the leaves and leaf sheaths were most favoured, particularly those of the weaker plants or those previously injured by the first generation larvæ. Eggs were rarely laid on those plants with the bulb showing and seldom on plants with a prominent 'neck.'

In the earlier part of the growing season larvæ hatching from eggs laid on the soil surface enter the plant at the junction of the roots and the forming bulb, presumably finding their way down through the soil and not, so far as we have been able to determine, entering the plant in the stem and then passing down to the bulb. The larvæ, after feeding at the base of the bulb, gradually work their way towards the top, causing the plant to decay and wilt. Partly grown larvæ also migrate from one plant to another in a row and have frequently been observed entering the stem of the new plant just below the surface of the soil. These larvæ do not necessarily descend to the roots, although this downward movement is usual, but occasionally burrow upwards to the tops, causing the leaves to wilt, leaving a sound and uninjured bulb below.

When eggs are laid on the leaves or in the leaf sheaths the larvæ usually find their way to the bulb as soon after hatching as possible by passing down inside the sheath. Larvæ have frequently been taken within the hollow stems from one to six inches above the soil surface, as many as one to sixteen maggots being found at times in a single leaf, but these doubtless have been forced up by the decomposition of the bulb and stem below ground rather than have hatched and lived together in the leaves. Larvæ, even in small seedling onions, will continue to feed in the plant they are attacking, passing up into the leaf above the soil surface before they migrate to another plant in the same row.

In general, this insect causes loss by the direct destruction of seedling onions in the early spring, by the decay or rot of developing bulbs in early summer and by a reduction in weight in the marketable crop as a result of larval feeding which has not been sufficient to cause the death of the plant.

Control Measures.

From records under North American conditions it appears to be conceded that soil treatments with gaseous substances, dry and wet applications to the soil surface and such like treatments are of no value under commercial methods of onion growing. Commercial fertilizers have had the effect of increasing the tonnage and have to some extent enabled plants to withstand an attack. The poisoned bait mixture consisting of sodium arsenite, molasses and water, applied

in the form of coarse drops and placed in open "pie-dishes" finds favour in many sections of North America. In such sections this bait is regarded as the most satisfactory commercial control operation, but it must be conceded that even it has not always been successful in preventing infestation. Too much rain during the spring oviposition period or adverse climatic factors are offered as excuses for such failures. Nevertheless, judging from information at our disposal, onion growers, particularly in Eastern Canada and United States, are being advised to use the sodium arsenite bait. Under conditions that prevail at Vernon, B.C. and doubtless applicable to all "dry belt" conditions, we are clearly of the opinion that this bait is of no practical value, possibly owing to the presence of irrigation water in ditches or furrows. This statement is based on four years' records in its use at Vernon. In 1918, the ordinary "pie dish" method of application was employed and the growers took a decided loss following its use. In 1919, an improved "pie-dish" was devised containing a bait-saturated felt pad over which was arranged an air tight reservoir capable of holding a half gallon of water. The felt pads were thus maintained in a continuous moistened condition for about two months with occasional renewals of water and bait. The same dishes were used in 1920 and 1921 and records on oviposition in baited and non-baited areas were carefully kept each year. No variable weather condition affected these baits and twice-a-week tests of liquids yielded 100% mortality with flies when fed in confinement. Dead flies were also seen in the field, but the simple fact remains that under field conditions results of value were not obtained, and we are now forced to abandon the poisoned bait control measure as a recommendation to growers in the "dry belt" of British Columbia.

We have, however, been able to devise another control operation which judging from results thus far obtained, is more efficient and less expensive. This operation takes advantage of the selective habits of the adults for oviposition. It was noticed that any volunteer onion growth present in the field invariably attracted the first flies during the May oviposition period and further it was observed that the stronger growing seedling onions, near an irrigation ditch, attracted the adults during June. As pointed out in the life history notes oviposition commences in the middle of May when the onions are only 1½ inches high. At this time the volunteer onion growth was four to eight times that of the seedlings. In other words, the volunteer onion growth of May was equal to the seedling onion growth of June and both attracted flies for the purpose of oviposition.

We learnt, therefore, to recognize the fact that these volunteer onions were a powerful factor in trapping the first generation flies for oviposition and, on developing this idea, we also found out that a great deal depends on the type of growth produced. We have already mentioned the fact that in mid-summer, during the flight period of the second generation flies, the weakest plants or those often previously attacked, proved more attractive to the adults than the strong growing bulbs. This observation, as it applies to the mid-summer habits of the flies also applies to the spring habits as it relates to the type of volunteer onion growth. In short, the volunteer onion which shows a bulb or "neck" with the leaves arising some distance from the soil was not chosen for oviposition. The type of growth which proved most attractive was produced by a cull bulb in which the leaves grew flaccid and which arose at the ground level. As a matter of experience less than 10% of the volunteer onion growth under normal conditions yielded the most suitable type of growth, but on such plants practically the entire

first generation of flies oviposited. On this information we laid down the following plan which has been followed now for three years on commercial plantations of from eight to ten acres and results have been checked against the poisoned bait experiments. At the time the seed is being sown in the main plantation or following the seeding operations, plant a row of cull onions, held over from the previous year's crop, every 100 feet through the plantation, setting them about four inches deep and about six inches apart in the row. Allow these culls to sprout and grow so that when the seedlings are an inch high, the volunteer growth is 6 to 8 inches. Pull up and burn these volunteers about June 15th or at the time when the greatest number of first generation larvæ are present in them and before pupation occurs.

Time and space does not allow us to present the data covering this "trap crop" method of control or the records on the poisoned bait measure as obtained at Vernon, B.C., but we hope at some later time to do so.

(A) Showing pallid, sickly appearance of mite-injured plum foliage;
(B) Normal plum foliage. (Reduced)

NOTES ON THE PLUM SPIDER MITE OR EUROPEAN RED MITE.

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The following paper on the Plum Spider Mite is largely based on orchard observations made from 1914 to 1921, and on life history studies conducted during 1921 by the junior writer.

History and Distribution.

The Plum Spider Mite or European Red Mite (*Paratetranychus pilosus* Can. and Fanz.) is an European species which doubtless was introduced into Canada on imported nursery stock. It was first noticed in Ontario in 1912 by Caesar (1),

and this appears to be the earliest record of its appearance in North America. Since then, it has been reported from Pennsylvania and Connecticut (2) and last summer (1921) specimens of the mite were forwarded to us from Vernon, B.C.

The spider mite occurs in all the fruit growing districts of Ontario, but is especially troublesome in the Niagara district. In view of its wide-spread occurrence in this province, it appears to the writers that it must have been introduced many years before its discovery, and that it must have a much wider distribution in North America than that recorded in literature. It is highly probable that in many cases *P. pilosus* has been mistaken for the common red spider *T. telarius* or for the clover mite *Bryobia pratensis* and has been reported under one or the other name.

Host Plants and Nature of Injury.

We have taken the mite on European and Japanese plums, apple, sour and sweet cherries, pear and peach. According to Caesar, it also occurs on hawthorn, and Garman (3) records its occurrence on rose. The European plum is by far the favourite host plant with apple next and then sour cherry. In Connecticut the mite has caused severe injury to apples, particularly Baldwin trees, but in Ontario it has proved to be, so far, only of importance as a pest of European plums.

In the Niagara fruit belt, the mite is one of the major pests of the plum orchard. It attacks both surfaces of the leaves and, by means of its mouthparts, punctures the tissues and withdraws the plant juices. At first this results in a speckling of the leaves, due doubtless to the withdrawal of chlorophyll. Later on, if the infestation is severe, all the leaves become pallid, sickly in appearance, tough and largely functionless. From a distance the foliage on badly attacked plum trees looks as if it were coated with road dust.

The injury to the leaves naturally robs the trees of vigour, and, when severe, checks the growth of the wood, dwarfs the fruit and retards its ripening. Two years ago the following data (table No. 1), showing the loss in weight and size of fruit and in growth of wood due to mite injury, was secured by comparing the trees in an infested block of plums with those in an uninfested block. The trees were the same age, and were grown under the same conditions, apart from the fact that the uninfested trees had been sprayed with lime sulphur and the others with bordeaux mixture.

TABLE No. 1—Showing Loss in Weight and Size of Fruit and in Growth of Wood Due to Mite Infestation

Variety	Loss in Weight of Fruit	Loss in Size of Fruit	Loss in Terminal Growth of Wood
Gueii	41.5%	40.3%	23.9%
Pond's	20.6%	24.3%	45.6%
Lombard	27.3%	19.1%	22.3%
Reine Claude	28.7%	24.8%	35.0%

On apple trees, according to Garman, the infested foliage becomes brownish or assumes a dull leaden appearance, and later in the summer many of the leaves drop. The same author reports a marked reduction in the size of the fruit on infested Baldwin trees.

Life History.

The Egg.

Description: The egg is flattened spherical in shape, and measures .15 mm to .16 mm in diameter. When newly laid, it is pearly to pink in colour, and later on becomes a dull dark red. At the apex there is a hair-like process about as long as the diameter of the egg.

The overwintering and summer eggs are similar in size, shape and colour.

Location: The overwintering eggs are located on the bark anywhere from the tips of the twigs to the trunk, usually on rough bark and in the axles of shoots and spurs.

The summer eggs, in the early part of the season, are laid on any part of the upper or lower surface of the leaves and on the petioles. Later on, some of them are deposited on the bud scales and on the bark.

Hatching of Overwintering Eggs. The eggs commence to hatch at the time European plums are in full bloom. In the plum orchard (situated near the lake shore) which we had under observation this past season, the period of hatching extended from May 2nd to May 9th.

Incubation Period of Summer Eggs: The period of incubation in our experiments varied according to the temperature, from 13 days in the spring, to 6 days in midsummer. The average for the season was about 9 days. More precise data on the duration of the egg stage is given in table No. 2:

TABLE No. 2—Showing Duration of Incubation

Brood	No of Exp's	No of Eggs	Time of year	Incubation Period			Temperature		
				Min.	Max.	Aver.	Min.	Max.	Mean
2nd	10	72	May 23rd. to June 10th	10	13	10.5	40	85	61
3rd	13	81	June 19th to July 8th	7	8	7.5	48	97	74
4th	13	134	July 11th to July 26th	6	8	7.0	60	91	77
5th	16	110	July 30th to Aug. 19th	8	11	9	52	85	69
6th	14	89	Aug. 24th to Sept. 12th	8	11	10	48	92	60

Stage of Growth when First Summer Eggs are Laid: The first generation adults commenced laying eggs about May 25th, or, in other words, at the time the calyces on early varieties of plums were beginning to fall.

Immature Forms.

During its growth the spider mite moults three times and thus passes through three immature stages. The newly hatched mite is termed the larva, after the first moult it is the so-called first nymph or protonymph and after the second moult the deutonymph.

Description: The larva is oval in shape, sparsely clothed with long bristles delicate, pearly pink to dull red in colour and measures about .16 mm by .083 mm. It has only three pairs of legs.

The protonymph has four pairs of legs and is somewhat darker in colour than the larva. It measures .198—.270 mm. x .162—.198 mm.

The deutonymph in shape and colour resembles the other immature forms. The legs are translucent and sparsely covered with hairs. Like the larva and first nymph, the deutonymph is very delicate and soft-bodied. In size it is .32 mm. —.36 mm x .23 mm.

Habits of Immature Forms: The larvæ and nymphs feed principally on the lower surface of the leaf, generally close to the veins. They may remain feeding in one spot for several hours.

Each moult is preceded by a quiescent period of one or two days during which time the larva or nymph remains attached to the leaf and shows indication of life.

Length of Larval-nymphal Period: In our studies this period varied from 17 days in the spring to 7 days in June and July, the average being 10.7 days. Fuller data covering the six generations are shown in Table No. 3.

(*a*) Fellenburg plum severely injured by mite. (Reduced)

TABLE No. 3—Showing Duration of Larval-nymphal Period

Brood	No. of Exp's	No. of Nymphs	Time of year.	Nymphal Period			Temperature		
				Min.	Max.	Aver.	Min.	Max.	Mean
				Days	Days	Days			
1st	11	48	May 3rd. to May 21st	16	18	17	34	75	53
2nd	12	60	June 5th to June 20th	8	11	9	42	87	64
3rd	13	72	June 20th to July 13th	7	10	8	48	98	77
4th	12	82	July 18th to Aug. 3rd	7	10	9	52	91	76
5th	15	58	Aug. 7th to Sept. 29th	8	13	11	46	86	66
6th	13	35	Sept. 1st to Sept. 23rd	11	15	13	48	90	66

The Adult.

After the third and final moult the mite reaches the adult stage.

Descriptions: The female is oval in shape and rather stout; carmine in colour with dark red to black blotches on the abdomen; and measures .36—.46 mm x .25—.28 mm. The legs are cream to dusky yellow in colour. On the dorsal surface there are 26 setose bristles, each of which is set in a conspicuous white tubercle.

The male is considerably smaller than the female and measures about .20 mm. —.28 mm x .14 mm—.16 mm. The cephalothorax is pearly pink to reddish with a median crimson eye-spot; the abdomen is dark red to purplish black and the legs are translucent.

Egg Laying Activities of the Female: In our insectary studies, the female mites commenced to deposit eggs 2 to 5 days (the average was three days) after reaching maturity. Each female laid from 11 to 90 eggs with an average of 38.6, (table No. 4). The daily rate of deposition per female varied from 1 egg to 12 eggs, and the egg-laying period ranged from 3 to 29 days. (Table No. 5).

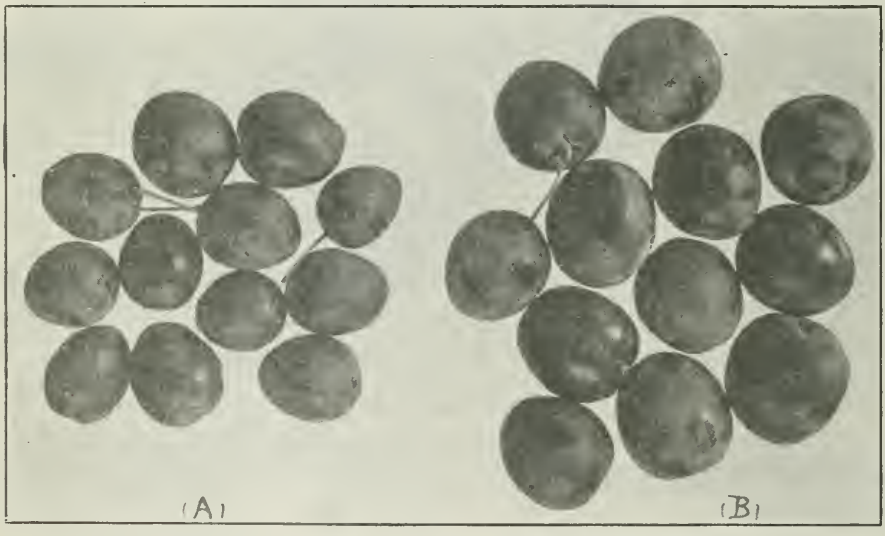
TABLE No. 4—Showing Daily Number and Total Number of Eggs Laid per Female

Brood	No. of Pairs	Eggs Laid Daily			Total Eggs Laid			Time of Year	Temperature		
		Min.	Max	Aver.	Min.	Max.	Aver.		Min.	Max.	Mean
1st	6	1	12	3	12	39	29	May 19th to June 14th	38	90	1
2nd	7	1	9	4	11	62	42	June 15th to July 14th	48	98	74
3rd	7	1	9	3	41	90	66	July 7th to Aug. 6th	52	95	77
4th	7	1	9	3	38	75	52	July 26th to Aug. 30th	46	92	75
5th	7	1	8	3	13	52	31	Aug. 19th to Sept. 16th	46	92	60
6th	8	1	8	3	11	20	15	Sept. 14th to Sept. 29th	45	80	58
Average throughout season:				3.4			38.6				

Length of Adult Life of Female: As shown in table No. 5. the adult females lived from 6 to 33 days, with an average covering the six generations of 17.7 days.

TABLE No. 5--Showing Egg Laying Period and Length of Adult Life of Female

Brood	No. of Pairs	Egg Laying Period			Length of Life			Time of Year	Temperature		
		Min.	Max.	Aver.	Min.	Max.	Aver.		Min.	Max.	Mean
		days	days	days	days	days	days				
1st	6	3	13	9	8	25	18	May 19th to June 14th	38	90	61
2nd	7	4	20	12	6	25	16	June 15th to July 14th	48	98	74
3rd	7	6	24	19	19	27	23	July 7th to Aug. 6th	52	95	77
4th	7	12	29	19	18	33	24	July 26th to Aug. 30th	46	92	75
5th	7	6	17	12	10	29	18	Aug. 19th to Sept. 16th	46	92	50
6th	8	3	9	5	7	12	9	Sept. 14th to Sept. 29th	45	80	58
Average throughout season:				12.5			17.7				



(*a*) Typical Gueii plums from mite-infested trees compared with (*b*) plums from uninfested Gueii tree. (Reduced)

Habits of Male and Length of Adult Life: The males are active, and appear to be engaged most of the time running nimbly over the leaf surface in search of females. They are occasionally found attending quiescent female deutonymphs.

In mating, the male crawls under the female, extends his genital parts upward and curving slightly forward engages with the female. Several males may gather around a female, and each may in turn mate with her.

The male is short-lived. In our studies, the average length of life was 3 days, the maximum 5 days and the minimum 2 days.

Parthenogenesis. In order to determine whether this species is parthenogenetic, six female deutonymphs were placed in separate cages and were kept isolated during their entire life. Four days after reaching maturity, all the females commenced to lay eggs, and each deposited from 10 to 41 eggs, the average being 25 eggs. All the progeny proved to be males.

Proportion of Males to Females: At no time, during the past season, did our observations in various orchards show a preponderance of males over females. Counts made in the orchard at different times gave an average ratio of about 1 male to 10 females. In the insectary, the ratio was 1 to 4. This would indicate that, under normal conditions, most of the females are fertilized.

Number of Generations.

The activities of the mite extended this past year from May 2nd when the overwintering eggs commenced to hatch, to mid-October, when the last eggs were laid. During this period—5½ months—a maximum of six ("first hatched series") and a minimum of three generations ("last hatched series") developed in the insectary. This, of course, means that under our conditions, there are three full generations and three additional partial generations.

Overlapping of Broods.

Except for two weeks in the spring, namely, from May 11th to 25th, when only immature forms were found, all stages from eggs to adults were present in the orchard throughout the season. The overlapping of the different generations is shown in table No. 6.

TABLE No. 6—Showing Number, Duration and Overlapping of Generations.

Winter 1920-21	May	June	July	Aug.	Sept.	Oct.	Winter 1921-22
1st Gen.	2	23					
2nd. Gen.	25			3			
3rd Gen.		19				14	
4th Gen			11			14	
5th Gen.			30			14	
6th Gen				24		14	

Period of Maximum Infestation.

From the first appearance of the mite in early May until the middle of June, the degree of infestation was very light. However, during the month of July the mites increased marvellously, at this time as many as 800 to 1,200 eggs being found on a single plum leaf. The mites spread throughout the trees and attacked every leaf. From the third week in August to the end of the season their numbers fell even more rapidly than they had increased. The explanation of this is noted under the heading of Natural Control.

Comparative Susceptibility of Varieties of Plums.

Notes made on the comparative susceptibility of over fifty varieties of European plums are presented herewith in tabular form.

TABLE No. 7—Showing Comparative Susceptibility of European Plums to Mite Injury.

Severe	Moderate	Light	Very Light
Smith Orleans	Arch Duke	Duane	Reine Claude
German Prune	Victoria	Quackenboss	
Shipper's Pride	Gueii	Lombard	
Shropshire Damson	Washington	Grand Duke	
McLaughlin	Hand	Diamond	
Pond	Monarch	Tennant Prune	
King Damson	Yellow Egg	Warner's Late	
Moore's	Imperial Gage	Latchford	
French Damson	Kingston	Bleeker's Gage	
Ancaster	Bradshaw	Hulling's Superb	
Emerald	Fellenburg		
Riley Damson	John A.		
Belgium	Field		
Wyedale	Lawson		
Pearl	Klondyke		
	Early Rivers		
	Moyer		
	Blue Prolific		
	Early Transparent Gage		
	Canada Orleans		
	Hudson		
	Large Golden Prolific		
	Curlew		
	Sugar Plum		
	Pacific Prune		
	Improved Lombard		

Control.

Natural Control.

Depletion of Food Supply: The depletion of the food supply was undoubtedly the most important natural check on the multiplication of the spider mite this past season. The leaves of severely attacked trees became tough and dry in midsummer, and ceased to provide the mites with sufficient nourishment, consequently most of them on such trees perished. Trees, which in July had been infested with countless numbers of mites, became almost free towards the end of August. Thus it happened that the smallest number of overwintering eggs were deposited on the most severely infested trees.

Weather: The mites, feeding as they do on the upper and lower surfaces of the foliage, are not afforded very much shelter by the leaves during the storms. Rains wash them off the upper surface, and heavy rains accompanied by strong winds, wash them from the lower surface. Immediately after a heavy rain storm last summer, infested trees were examined and it was found that approximately 90% of the mites had been washed off the upper surface, and approximately 70% from the lower. The eggs, of course, remained attached to the leaves.

Predaceous Enemies: In view of the fact that the mite was so very abundant this past season, it was very surprising to find that predaceous enemies were remarkably scarce. The minute, black ladybird beetle, *Stethorus punctum* Lec. was found in small numbers feeding on the mites. The well-known two-spotted ladybird beetle, *Adalia bipunctata* Linn. was also observed on infested foliage apparently attacking the mites. But so far as we could judge, no predaceous enemies had any appreciable effect in reducing the numbers of the spider mite.

Mortality Due to Location of Overwintering Eggs: In cases where the overwintering eggs were located a considerable distance from the leaves, for example, near the crotch or on the trunk, it was observed that quite a number of the minute, newly-hatched larvæ perished before reaching the leaves.

Artificial.

Lime Sulphur: It is very fortunate that, in order to successfully combat the spider mite on plum trees, it is not necessary to make any special applications or to use any special spray material. Our experiments have shown definitely that the pest can be controlled by spraying twice with commercial Lime Sulphur 1-40,

Overwintering eggs on plum twig. X 10.
Plum Spider Mite; male and female. X. 10. (Inset)

at the times recommended for the control of Brown Rot, Curculio, etc. viz: (1) when the fruit is set and most of the calyces have dropped and (2) two weeks later. Needless to say the spraying must be done very thoroughly.

The results secured in a Vineland orchard in 1920 were very striking. One large block of plum trees was sprayed with Lime Sulphur and another adjoining block, with the same varieties in it, was sprayed with Bordeaux mixture. By midsummer the foliage on the trees sprayed with Bordeaux mixture was pallid, largely functionless and stood out in very marked contrast to the healthy, green foliage in the blocks sprayed with Lime Sulphur.

Sulphur Dust: Preliminary experiments indicate that heavy applications of sulphur dust will control the mite.

Literature Cited.
[1]Caesar, L., Can. Ent. XLVII, No. 2, pp. 57-58, 1915
[2]Garman, P. Bulletin 226, pp. 184-189, Conn. Agr. Exp. Sta., 1921.
[3]Garman, P., Journ. Econ. Ent., 14, pp. 355-358, 1921.

INSECTS OF THE SEASON IN ONTARIO.

W. A. Ross, Dominion Entomological Laboratory, Vineland Station, and L. Caesar, Provincial Entomologist, O.A.C. Guelph.

Orchard Insects.

Codling Moth (*Carpocapsa pomonella*). The very hot weather throughout July aroused fears that there would be an abnormally large percentage of second brood larvæ and consequently a much greater amount of injury to apples and pears.

Lygus injury on peaches. Note the unsightly scars.

Fortunately these fears were not realized to any marked extent, apparently because the weather became comparatively cool in early August and remained moderately cool throughout that month.

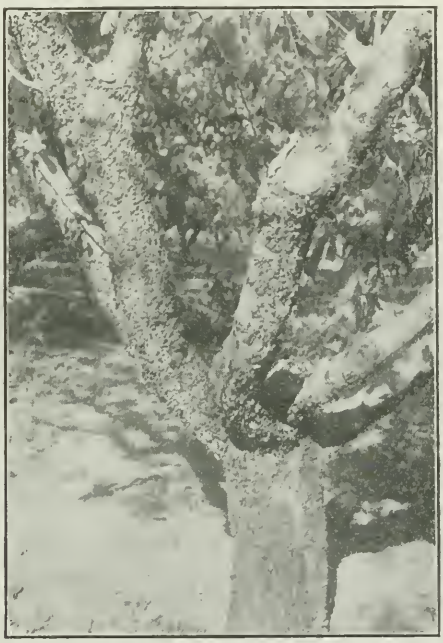
Plum Curculio (*Conotrachelus nenuphar*). In some localities this pest did much harm, but in most parts of Ontario it was not more troublesome than usual.

Cigar and Pistol Case-Bearers (*Coleophora fletcherella and C. malivorella*). These two insects, usually considered minor orchard pests, were remarkably abundant in the Newcastle district. Almost every apple orchard which had not been well-sprayed the previous year, or which had only received the post-blossom application, was badly infested. In June many of the trees were almost completely defoliated and what foliage was left was brown and ragged. In one case about 30 acres of Stark trees were so severely damaged that the brown, blighted appearance of the trees was conspicuous a mile away. A cursory examination this fall of affected trees indicated that the outbreak was over.

Bud Moth (*Tmetocera ocellana*). In the Newcastle apple orchards, infested with case-bearers, the bud moth was also quite abundant and contributed its share of injury to the foliage. In other parts of the province it was not especially conspicuous.

Canker Worm Work (*Paleacrita vernata and Alsophila pometaria*). The spring canker worm was abundant in several parts of the provinces—notably in Huron and Pell counties. The fall canker worm was also present in large numbers, especially near the southern end of Halton county. It will not be surprising if there are several outbreaks of these insects this coming season.

Green Apple Bug (*Lygus communis*). In last year's report we stated that this insect had been discovered in a few orchards near Newcastle, and that it had done much harm to pears and apples, especially to the former. This year we con-



Peach tree severly attacked by fruit-tree bark-beetles.

ducted experiments on the control of the bug in the two worst infested pear and apple orchards. Most of the trees were sprayed with nicotine sulphate, 1 pint to 100 gallons of the regular spray mixture, and the others were dusted with a sulphur contact dust, containing 2% nicotine. High pressure, 225 lbs. was used for liquid applications, and the trees were thoroughly drenched. Most of the spraying and all the dusting was done just after the blossoms fell, but some of the spraying could not be completed until four days later. The results on all the early sprayed trees were excellent, scarcely a pear and very few apples showing any green bug injury. On the later sprayed pear trees, at least 50% of the fruit was injured by the bug. The dust proved to be very unsatisfactory; for instance, practically all the fruit on two rows of pears which were well dusted, was so deformed that it was unsaleable.

Fruit Tree Leaf Roller (*Tortrix* (*Cacoecia*) *argyrospila*). This destructive pest, unfortunately difficult to control, seems to be increasing and spreading more widely than in the past. Many fruit growers in the apple growing sections from Whitby to Trenton now consider it the worst insect pest in their orchards.

Approximately one-half of the crop in an apple orchard near Trenton was damaged by the leaf-roller this year. According to the owner, this particular orchard was badly infested about eight years ago, then it became nearly free from the insect.

The Plum Spider Mite (*Paratetranychus pilosus*). There was another severe outbreak of the Plum Spider Mite in the Niagara district, and more plum orchards were injured by it than in any other previous season. To some extent

Plum trees injured by leaf hoppers. Note the defoliation of the terminal growth.

at least, this was undoubtedly due to the fact that, because of the very light crop of plums, many orchards did not receive the regular applications of lime sulphur. The life-history, habits, economic status and control of this pest are discussed elsewhere in this report.

The Pear Psylla (*Psyllia pyricola*). This destructive pest was again very abundant and injurious in pear orchards at Burlington and Queenston and in other parts of the Niagara fruit belt.

Oak Plant Bugs (*Lygus quercalbae and L. omnivagus*). In last year's report we mentioned that in a peach orchard at St. Davids the fruit was quite seriously injured by *Lygus quercalbae*. This year the same species and another

plant bug *L. omnivagus* were found in June attacking peaches near St. Catharines. Later on peaches injured by *Lygus* were observed in fourteen other orchards in the section between Beamsville and St. Davids. In one planting, about 75% of Elberta and St. John peaches were more or less damaged. As one would expect, only orchards close to oak trees were affected.

It is of interest to note that according to Prof. P. J. Parrott of Geneva, *L. quercalbae* and *L. caryae* were taken this year feeding on peaches in New York State.

Knight* states that *L. quercalbae* has been found breeding only on white oak (*Quercus alba*), and that *L. omnivagus* is most abundant on oaks, particularly *Q. alba, Q. rubra, Q. coccinea, Q. prinus* and *Q. velutina.* Knight has also reared specimens from chestnut (*Castanea dentata*), *Cornus florida, C. circinata* and *Virburnum acerifolium. L. caryae* breeds on various kinds of hickory.

Fruit-Tree Bark-Beetle (*Eccoptogaster rugulosus*). In the Niagara fruit belt and in Lambton county this species was decidedly more troublesome than usual on fruit trees, particularly on cherry and peach. In most of the cases we investigated, wood-piles and brush-piles proved to be the source of infestation. During late summer bark beetles were quite commonly found on cherry trees, boring into the spurs, which bear the leaf clusters, causing in this way what some growers referred to as a new "fire-blight." Similar leaf injury was observed on apples and peaches.

Orchard Aphids: Apple aphids, *Aphis pomi* and *A. sorbi* caused no appreciable injury this year in most orchards.

In the Fenwick district, sweet cherries were heavily infested with the black cherry aphis, *Myzus cerasi,* but in the other fruit growing sections, this species was not especially troublesome.

Pear Blister Mite (*Eriophyes pyri*). We are glad to report that this pest has not increased, as we were afraid it would, to any marked extent.

The Ribbed Cocoon-Maker (*Bucculatrix pomifoliella*). Last winter the white cocoons of this species were sufficiently abundant and conspicuous on apple trees in a Simcoe orchard to seriously alarm the owner. He, of course, imagined that his trees were infested with a new and dangerous pest.

Leaf Hoppers on Fruit Trees. The outbreak of rose leaf hopper, *Empoa rosae,* referred to in our reports for 1919 and 1920, was to a very large extent brought under control, no doubt by natural agencies, and this year the insect, although common on apples, was of little importance.

The apple or potato loaf-hopper, *Empoasca mali,* was very abundant on apple and plum trees throughout the Niagara district. On apples the feeding activities of the insect caused all the tender foliage on the terminal growth to become curled. In the case of plums the foliage not only became curled, but a leaf-burn, similar to hopper-burn on potatoes, developed, and on badly attacked trees many leaves on the terminal growth fell prematurely.

Peach Tree Borer (*Sanninoidea exitiosa*). More inquiries than usual were received from the Niagara district regarding the control of this borer. Observations made in Lambton county indicate that the borer is much more injurious in that county than in other Ontario peach growing sections.

*Bul. 391, Cornell Agr. Exp. Sta., May, 1917.

Grape and Small Fruit Insects.

The Grape Leaf Hopper (*Typhlocyba comes*). There was a serious outbreak of the grape leaf hopper in the Niagara district, particularly in the section between Grimsby and the Niagara river. During late summer and autumn badly infested vineyards were conspicuous from a distance on account of the brownish, or, as some growers put it, "rusty" condition of the foliage. The severe injury to the leaves naturally affected both the size and quality of the fruit.

Agawam grapes.—A. Typical bunch from sprayed vines.
B. Typical bunch from hopper-infested vines.

As a general rule, the leaf hopper is only troublesome in the vicinity of woodlots and waste land, where the fallen leaves, long grass, weeds, etc. afford the insect favorable hibernating quarters, but this year it was abundant and injurious even in vineyards with comparatively clean surroundings.

Immense numbers of hoppers went into hibernation in the fall and no doubt, if the winter is favorable for the insect, there will be another outbreak next year.

Rose Chafer (*Macrodactylus subspinosus*). A severe outbreak of the rose chafer occurred at Fenwick, and in the affected section graperies, which were not sprayed, were completely or almost completely stripped clean of blossoms and newly-set fruit. The chafers were present in the vineyards for some three weeks.

There was also a small outbreak of the chafer near Beamsville.

Strawberry Leaf Beetle (*Paria canella*). Strawberry leaf beetles occurred in exceptionally large numbers last spring in the Vineland-Jordan district, and attacked and riddled the foliage of strawberries. They also attacked the opening buds of raspberries and in some cases destroyed them. The larvæ were commonly

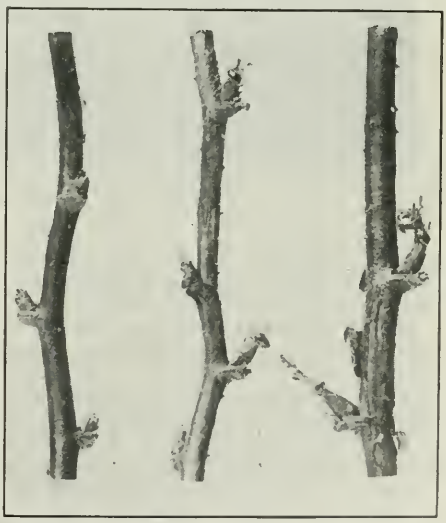
found feeding on strawberry roots, and, to some extent on the crowns. However, on account of the prevalence of "black-root" (winter injury) we found it impossible to gauge the injury caused by the root-worms.

Rose chafers feeding on apples.

Strawberry Weevil (*Anthonomus signatus*). This pest was again injurious in some strawberry fields in the Niagara district.

Raspberry Saw-Fly (*Monophadnoides rubi*). This insect was very abundant in a number of places, notably at Burford, Waterford and Brighton. At Burford several acres of raspberries were nearly defoliated by it.

A. Grape blossom cluster destroyed by rose chafers. B. Normal blossom cluster.



Strawberry leaf beetles feeding on and destroying opening raspberry buds.

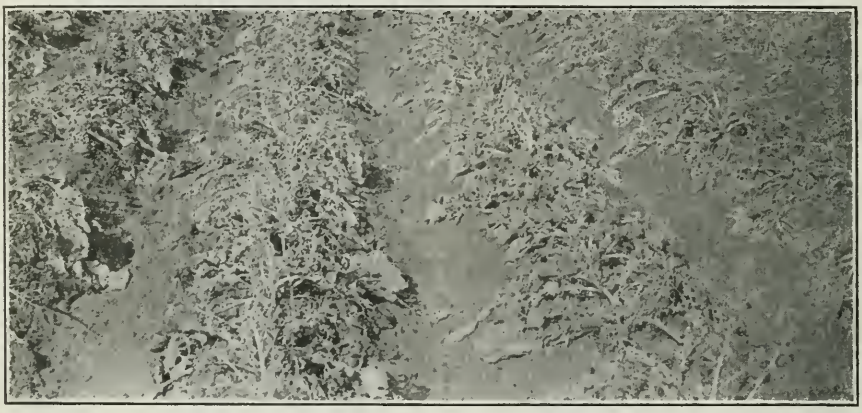
Raspberry Cane Maggot (*Phorbia rubivora*). At Brighton and Port Hope the maggot of this fly caused considerable alarm by boring into and killing the young raspberry shoots. It is seldom that injuries from this insect in Ontario are reported. The variety affected was Columbia.

Blackberry Leaf Miner (*Metallus bethunei*). This miner was abundant in most of the blackberry patches in the Niagara and Burlington districts. We regret to report that all our efforts to discover a satisfactory method of controlling this pest have so far met with failure.

Vegetable Insects

Cabbage Maggot (*Phorbia brassicae*). There was about the usual amount of cabbage maggot injury in the early part of the season. The very hot weather in the first part of July apparently had the effect of reducing the insect to insignificant numbers, because from that time to about the first of October scarcely a fly could be found.

Cabbage Worms (*Pieris rapae* and *Autographa brassicae*). The cabbage worm was apparently not more injurious than it is in the average season, but the cabbage looper was unusually abundant, at least in the Niagara district on cabbage, cauliflower and turnips. In a turnip field at Jordan Harbor, the looper practically stripped off all the leaves.



Turnips nearly defoliated by cabbage looper.

The Cabbage Aphis (*Aphis brassicae*). This plant louse was quite abundant and injurious in the Niagara and Burlington districts.

Onion Thrips (*Thrips tabaci*). The thrips was again injurious in the onion growing sections of southern Ontario.

The Corn Ear Worm (*Heliothis obsoleta*). There was a remarkable outbreak of the corn ear worm in Ontario, undoubtedly the worst outbreak of this insect that has ever occurred in the province. From almost every part of the province, even from Port Arthur and Northern Muskoka, the same story came that practically every ear of the late corn was infested with caterpillars. In certain districts, canning factories were closed down because there was not sufficient uninjured corn to keep them going. At Port Dover, Simcoe and Vineland, the ear worm was found on greenhouse tomatoes, boring into the fruit, and in this way making it absolutely unfit for consumption.

The Striped Cucumber Beetle (*Diabrotica vittata*). This species was abundant and injurious in the Niagara district.

The Brown Fruit Chafer (*Euphoria inda*). For the first time in our experience, this insect was commonly found in different parts of southern Ontario attacking the ears of sweet corn. Enquiries regarding its economic status were received from the Niagara fruit district, Norfolk county, Burlington, Clarkson and St. Thomas. The insect was also found, as it has been in previous years, feeding on ripe fruit, particularly on peaches and pears.

Bean Weevil (*Bruchus obtectus*). In June living specimens of this weevil were received from Ford, Ontario, where they were causing considerable damage to beans. Mention of this is made because injuries from the weevil are seldom reported.

Cutworms: Cutworms were again very destructive in the Niagara district. At Port Dalhousie asparagus was badly injured by them.

Asparagus Beetle (*Crioceris asparagi*). Judging by the reports we received, this beetle was more troublesome than usual. A grower at Queenston had splendid success in controlling the beetle in his large asparagus fields by dusting with arsenate of lime and hydrated lime. A power potato-duster was used in making the applications.

Potato Insects: The potato leaf hopper (*Empoasca mali*) was undoubtedly the most important pest of potatoes this year. Experiments and field observations indicated that practically all the so-called blighting of early potatoes, in the Niagara district at least, was caused by the hopper. It is very fortunate that thorough applications of poisoned bordeaux mixture will control most of the major fungus and insect pests of the potato, including the leaf hopper.

The potato beetle (*Leptinotarsa decemlineata*) and potato flea-beetle (*Epitrix cucumeris,* were abundant in most parts of the province. In the Niagara peninsula the three-lined beetle (*Lema trilineata*) was common on potatoes.

Greenhouse Insects.

The Rose Midge (*Dasyneura rhodophaga*). It is very gratifying to find that the tobacco dust treatment (see last year's report) will wholly eradicate this pest. In the two large greenhouse establishments at Grimsby no maggots have been found since the rose beds were treated in 1920.

The Chrysanthemum Midge (*Diarthronomyia hypogaea*). We are pleased to report that experience has shown us that this pest can be eradicated by spraying with nicotine and soap every second day for a period of about six weeks.

The Cyclamen Mite (*Tarsonemus pallidus*). This mite was again decidedly troublesome in Ontario greenhouses, and on account of its depredations, great difficulty was experienced in growing cyclamens successfully. Conflicting reports have been received regarding the efficacy of systematic spraying with a nicotine-soap solution as a means of controlling the mite.

Earthworms: Last September there was a veritable plague of earthworms in the rose beds of a large greenhouse at Grimsby. The earth was literally alive with worms; the manure disappeared rapidly; the soil lost its friability and became lumpy, porous and somewhat "sticky"; and the worms apparently disturbed the roots of the roses.

At our suggestion the beds were given a very light dressing of hydrated lime, and the lime was then washed in. This treatment was successful; it destroyed most of the worms and at the same time caused no injury to the rose plants.

Forest and Shade Trees.

Canker Worms (*Alsophila pometaria and Paleacrita vernata*). The prevalence of these worms has already been mentioned under orchard insects.

Birch Leaf Skeletonizer (*Bucculatrix canadensisella*). Last year the work of this small caterpillar was very conspicuous in the Eastern part of the province. This year it was conspicuous in forests between Galt and London where in September the brown appearance of the birch foliage was very noticeable.

Oak Twig Pruner (*Elaphidion villosum*). In the Muskoka district great numbers of dead twigs and branches, killed by this insect, were everywhere to be seen.

Imported Poplar and Willow Curculio (*Cryptorhynchus lapathi*). This destructive insect has now spread almost everywhere through the province and has destroyed great numbers of native willows and poplars. Considerable damage has also been done to Carolina poplars set out for shade or ornamental purposes.

THE CABBAGE MAGGOT (*Phorbia brassicae* Bouche).

L. Caesar, Ontario Agricultural College, Guelph.

This paper is a brief statement of some of the more interesting results obtained from a study of the cabbage maggot during the four years, 1918 to 1921. These are as follows:—

There was no evidence to indicate that the insect winters in any other way than as a puparium in the soil or occasionally in the stumps of cabbage, cauliflower or other similar plants.

Adults from these puparia begin to emerge in April or May and the great majority are out by the end of May, a few, however, continue to emerge over a long period—in 1918 up to the end of August, in 1919 and 1920 to the middle of July and in 1921 to the 21st of June. Later broods have also a prolonged emergence period.

The shortest preoviposition period in our cages was a little over four days. Fifty per cent. of the flies that oviposited in the cages did so inside of six days. There is considerable evidence to indicate that in the field the preoviposition period may be as short as two days. This would not be at all surprising since we know that females can mature eggs at the rate of 20 or 30 a day.

The largest number of eggs laid by any one fly was 117. These were deposited on six different days over a period of nine days—June 17th to June 25th. Another fly laid 103 eggs as follows:—May 28th, 51, May 29th, 29, May 30th, 23. Thus it is evident that egg laying may continue over a considerable period and that 20 or more eggs may be deposited each day. It would, therefore, not be surprising if at least some individuals laid 200 eggs or more.

The length of life of the flies is apparently, as Schoene suggested, three weeks or more. In cages situated in the north-east corner of pine woods males of the first brood averaged 19.1 days and of the second brood 16.6 days: females of the first brood 22.7 days and of the second brood 22 days.

No fly was in any case seen to lay eggs where these would be exposed to the sunlight but always in the shade.

The shortest incubation period for the eggs was slightly under 48 hours, 22 out of a total of 475, or 4.6 per cent. hatching in this time. In 1918 the average

period of incubation was 5.5 days: in 1919 3.8 days: in 1920 6 days; and in 1921 5.7 days. Under normal conditions nearly all eggs hatch inside of a week.

Sunlight and dryness of the soil or surroundings are destructive to eggs, approximately 90 per cent. of eggs under these conditions failing to hatch. Shade and moisture are favorable to them.

The number of broods a year has not been worked out, but we have been able to trace three and believe there may be a fourth, because third brood adults normally begin to emerge by at least the middle of August and as flies continue to emerge throughout most of September and are some years common to the 1st of October or later, there is very little doubt that some of these will be fourth brood. As implied above adults of all three broods may be present together in August and September.

It is interesting to learn that no brood, not even the first, is a full one; for a small percentage, some years about 4%, of the overwintering puparia fail to produce adults that year and pass through a second winter before doing so. Strange to say these adults in our test were not among the earliest to emerge the second year, the first of them coming out the first week in June, and the last the last week. Professor Brittain tells me he, too, has found that there is a two-year life cycle for a few individuals.

The exemption, with a few exceptions, of late crops of cabbage and cauliflower from serious injury would appear to be due to—first, the greatly increased number and activity of predaceous enemies, chiefly rove beetles, ground beetles and a large red mite, which destroy the eggs or larvæ or both; second, to the greater dryness and heat of the soil which lessens the percentage of eggs hatching; and third probably, as Schoene suggested, to the harder texture of the root tissues themselves at this season of the year.

Prolonged wet, cold weather when adults are about to emerge seems to lessen greatly the number that do so; for instance in 1919, May was very wet and cold and only 21.9% of the overwintering puparia produced adults, compared with an average of 85% the other three years.

Very hot weather seems also to have a great effect upon puparia. Last July was exceptionally hot, especially the first half of it, and from the middle of the month to the end of our work—October 1st—scarcely a fly emerged, radishes being 100% clean. Other years flies were present all through this period and radishes always somewhat wormy.

Control Measures

(1) *Cabbage and Cauliflower*:—From all over Canada and from New York, New Jersey and Indiana reports of excellent success from the use of corrosive sublimate have been received. I need not give figures to prove this but simply state that careful treatment will give from 80% to 100% control even in the worst years. Moreover, growers will use this treatment where they would not use tarred felt-paper discs.

Number of treatments: One, well-timed, will give fair results; two, well-timed, are better and are all that should be necessary, but if the timing, especially of the first application, is not well chosen three will be desirable.

Length of interval between treatments: On the average, one week seems about right. It should not be longer, a day less would not as a rule decrease its value much, and sometimes would even increase it.

Strength of corrosive sublimate: If only one treatment is given use 1 to 1000 i.e. 1 oz. to 6¼ gallons; if two treatments or more 1 to 1280 or 1 to 1600; i.e. 1 oz. to 8 or 10 gallons. The weaker strength, 1 to 1600, probably will be preferred by most men but should be applied a little more liberally than the stronger and the soil around each plant very thoroughly saturated.

Time of the first application: This should be just as the earliest eggs are beginning to hatch, which is usually about four days after egg-laying begins. This time seems to correspond with the date when European plums are almost, but not quite, in full bloom or when American plums are just beginning to bloom. Hence, if plants are set out early postpone treatment until this date. If plants are not set out until European plums are in full bloom or American plums are beginning to bloom or even later, treat in four days after setting out. If three treatments are to be used, the grower, even if he sets out his plants early may make the first treatment four days after setting out and the others at intervals of a week. A good plan and one that is being gradually adopted by growers is to watch for the first eggs and to begin treatment the second or third day after their discovery.

(2) *Radishes and Seed Beds of Cabbage and Cauliflower*: We have found that two treatments of radishes and also of seed beds of cabbage or cauliflower will give an average of about 80% or more absolutely clean plants, most of the remainder being only very slightly injured.

The first treatment of radishes should be in three or not more than four days after egg-laying begins; so treatment should begin preferably one day before the earliest treatment of cabbage. If radishes come up after European plums are in bloom make the first treatment on the fourth day after the first plants appear above the soil and the second five days or not more than six days later. The same recommendations apply to seed beds of cabbage or cauliflower.

Implements used in Treating: For very large fields probably the best method is a wooden tank or barrel supplied with two lines of thin rubber hose and one man to attend to each, controlling the flow by means of his thumb. For ordinary plots up to 12,000 to 25,000 cabbage plants we find that a wooden bucket or pail and a tomato can with a wooden handle about two feet long fastened firmly by tacks to the folded-over top of the can is a very cheap and rapid method. For radishes use a watering can with the knob removed.

How corrosive sublimate Controls: It does this in three ways; first it destroys nearly all of the eggs in contact with the moist treated soil; second, it kills many of the smaller larvæ and some of the larger; and third, it repels larvæ and thus by warding them off from the plant causes them to perish from lack of food. Larvæ once buried inside the root tissues usually escape injury. Corrosive sublimate does not deter flies from laying their eggs around the plant.

ECONOMIC ENTOMOLOGY IN QUEBEC DURING THE PAST DECADE

Father Leopold, Director of the Oka Agricultural Institute, La Trappe, Que.

The history of Economic Entomology in the Province of Quebec is intimately related with two Societies in our Province: The Quebec Society for the Protection of Plants from Insects and Fungous Diseases and the Pomological and Fruit growing Society of the Province of Quebec. I had first intended to deal with

economic entomology in its relation with fruit growing only, but the Dominion Entomologist suggested that I should widen its scope and deal with economic entomology in general, with special references to fruit-growing. I have, indeed, no pretention of being an entomologogist, but primarily a pomologist. Fruit-growing in one of its important phases, spraying and dusting trees, is intimately related with economic entomology. That was a sufficient reason to become a practical entomologist in my leisure hours.

As I said, our two societies mentioned above are intimately related, the scope of their endeavours coming into contact on more than one point. Economic entomology is that phase of entomology which relates to the control of injurious insects. Considering the great variety of insect forms, their diverse methods of food habits, the larger number of kinds of hosts which supply them with food, and the enemies which tend to destroy them, it becomes evident that the problem of insect control is a complex one. "The subject matter of this science is not insects alone, nor plants alone, nor farming alone. One may be a most excellent entomologist or botanist, or he may have the whole theory and practice of agriculture at his tongue's end, and at his finger's end as well, and yet be without knowledge or resources when brought face to face with a new practical problem in economic entomology. The subject is essentially the relation of things to each other; of insect to plant and of plant to insect, and of both these to the purposes and operations of the farm or orchard, and it involves some knowledge of them all." This definition by Dr. S. A. Forbes of economic entomology in its wider scope suffices to give the reasons why the Province of Quebec has not exclusively an Entomological Society but a Society "For the Protection of Plants from Insects and Fungous Diseases."

If we go rapidly over the history of our Society we will know what Quebec has done for the advancement of economic entomology in the past decade.

It is now a little over twelve years ago that the Society was founded with two or three definite objects in view:

1st. To bring together annually the biological workers of the Province who are interested in the study of economic entomology and fungi. Much inspiration, encouragement and help are gained at such meetings where workers have an opportunity of listening to papers and talking over matters in common. New viewpoints are presented, valuable information is frequently obtained, concerted action and mutual help are more likely secured, and fresh enthusiasm aroused.

2nd. To spread abroad among the people the new gospel of insect and plant disease control so that larger crops might be harvested and greater profits secured by the farmer. The need for such was evident from the annual loss to the oat crop of Quebec of over two million dollars; "blights" to the potato crop of over three million dollars; "scab and codling-moth" pest to the apple crop of over half a million etc. This information is given especially by the Annual Reports, are now in the hands of its members: The Lepidoptera, complied by Mr. printed in both languages, English and French. The twelve reports published up to date have received favorable recommendations from co-workers in the same field of endeavours in other Provinces and the United States.

3rd. The promotion of sciences of Entomology, Botany and Plant Pathology in the Province of Quebec. Three lists, published as supplements to the Annual Reports, are now in the hands of its members: The Lepidstera, compiled by Mr. A. F. Winn of Montreal; The Diptera, by Messrs Beaulieu (Montreal) and Winn: the Coleoptera by Mr. C. A. Chagnon, also of Montreal.

Remarkable progress has been made in economic entomology and plant pathology in our Province, thanks to such men as our President, Prof. W. Lochhead, professor of Biology at Macdonald College, who has occupied the chair of the Quebec Society for Protection of Plants since its very inception; Mr. C. E. Petch, an enthusiastic worker at the Federal Entomological Station of Hemmingford; the following professors of Macdonald College; Messrs W. S. Blair, who organized the spraying work done in our several demonstration orchards; P. I. Bryce and W. P. Fraser, who ably seconded Prof. Lochhead, T. G. Bunting, who succeeded Prof. Blair as Horticulturist at Macdonald College and who is responsible for the good work done there in spraying annually, seconded by such men as D. M. Straight, E. M. DuPorte, A. H. Maclennan, A. C. Gorham, E. M. Ricker and Mr. Tawse. Dr. J. C. Chapais and Mr. Auguste Dupuis, besides being charter members of the Society, have always taken a keen interest in entomology, Dr. Chapais not having missed reading a paper annually.

At Oka also, entomology had played an important part in the history of the College: In 1913, Mr. Firmin Letourneau, was made professor of Entomology, and the writer ever since 1911 has had charge of the spraying operations in the Oka extensive orchards, over 60 acres, being appointed vice-President of the Society in 1917, and since. I may add that we were the first to use Lime-Sulphur wash on our trees as well as the first commercial fruit-growers to dust orchards in the Province.

Dr. J. M. Swaine was appointed the first secretary of the Society at its inception and occupied the post until he resigned on account of his duties as Dominion Entomologist in charge of Forest Insects. Since 1919, Professor B. T. Dickson has ably succeeded Dr. Swaine as Secretary-Treasurer of Quebec Society.

It would not be just if I did not mention here that other remarkable men have played a very important part in the dissemination of entomological economic knowledge in our Province, as the Dominion Entomologists, the late Dr. G. Hewitt and his successor Mr. Arthur Gibson, who have always been in the front at every meeting of our Society. One may judge of their co-operation by the following papers read during the past ten years:

1911: The Care of the Farm Wood-Lot, by J. M. Swaine, C. E. Farm, Ottawa.
Cutworms and how to Control Them, by Arthur Gibson, the Chief Ass. Ent., Otta.
1912: The Role Played by Bees in the Fertilization of Flowers, by F. W. L. Sladen.
Some Insects which Attack the Roots of Vegetables, by A. Gibson.
1913: Some Insect Enemies of Shade Trees, by J. M. Swaine.
Injurious Flea-Beetles of Quebec, by A. Gibson.
Let us Instruct the Farmers, by G. Beaulieu, Ent. Branch, Ottawa.
Insects and the Forest, by J. M. Swaine.
Bee Diseases, by F. W. L. Sladen.
Notes on the Life-History and Control of the Bee-Moth, by J. I. Beaulne, Ottawa.
1914: The Brown-Tail Moth in New Brunswick, by E. H. Strickland, Ottawa.
Forest Insects in Stanley Park, B.C., by R. N. Chrystal.
Insects Affecting Ornamental Stock in Quebec, by J. M. Swaine.
1915: Grasshoppers and their Control, by A. Gibson.
Three Injurious Locusts of Nova Scotia, by C. B. Hutchings.
1916: Carriers for Dusting, by C. E. Petch, Hemmingford.
Cabbage Insects, by A. Gibson.
The White Weevil in Quebec, by J. M. Swaine.
Twe Destructive Shade Tree Borers, Locust Borer and the Bronze Birch Borer, by C. B. Hutchings.
1917: Warbles and Bots, by Dr. A. E. Cameron, Ottawa.
The Control of the White-Marked Tussock Moth, by J. M. Swaine.
1918: Dusting and Spraying Suggestions for Quebec, by C. E. Petch.
The Imported Alder Leaf Miner, by C. B. Hutchings.
Some Insect Injuries in Wood Lots, by J. M. Swaine.

1919: There were only pathological papers from Ottawa.
1920: The Entomological Branch in Canada, by A. Gibson.
The European Corn Borer in Ontario, by L. S. McLaine.
Spraying vs Dusting, by C. E. Petch.

Quite a few distinguished entomologists have come from time to time from the United States as speakers at our Society, and we note among others, Professor C. R. Crosby of Cornell who gave us in 1914 a synopsis of his work in the control of insects during that season, both in dusting and spraying. In 1918, Dr. W. H. Rankin from Cornell, also gave us a paper on efficiency factors in potato spraying.

Until 1913, Quebec had no Provincial Entomologist. Canon V. A. Huard, well known as the Editor of *Le Naturaliste Canadien* was made the first Provincial Entomologist, and held this position until 1916, when he resigned and Mr. George Maheux, the present titular, was appointed to the office. The Provincial Entomologist does not have the means of doing any actual field work, but cooperates with the Federal Department in their work at Hemmingford, P.Q.

Besides our Society for the Protection of Plants, the horticulturists and pomologists of the Province, members of the Pomological Society have always shown very keen interest in spraying problems of all sorts. As particularly interested in fruit-growing in our Province you will forgive me for insisting a little on this phase of economic entomology in Quebec during the past decade.

The most important work, during the first part of the last decade was accomplished through experimental work of a high practical value in the five demonstration orchards of the Province of Quebec. The original committee of these demonstration orchards comprised Prof. Blair, Mr. Peter Reid, Mr. Robert Brodie and the writer. Practical demonstrations were begun in 1911 and continued for five years, to determine the value of paris green and arsenate of lead as insecticides and lime sulphur and bordeaux mixture as fungicides. The different mixtures were put on in all the possible combinations in the same orchard, on practically the same dates with very different results. The conclusion was, that arsenate of lead was a much superior insecticide for biting insects, and lime sulphur wash did not burn the foliage of the apple trees nor deteriorate the fruit when applied in the quantity and density then recommended by the committee. Anybody visiting the demonstration orchards came back with the firm resolution of substituting lime sulphur wash for bordeaux. After the departure of Prof. Blair for Kentville, Prof. Bunting took over the continuance of his work on the committee of demonstration orchards.

The good results obtained in the orchards did much to expand the spraying in the province of Quebec and soon the large growers were possessors of gasoline spraying rigs of all description when they were the exception before.

Soon we found out that a good substitute for arsenate of lead was arsenate of calcium and the writer did not take much time to adopt this new insecticide generally in his orchards. Arsenate of calcium was eventually found to be a safer combination with lime sulphur wash than the arsenate of lead mixed with the same fungicide.

In a paper read before the Pomological and Fruit-growing Society of the Province of Quebec, the writer took up the importance of dusting for the control of the Codling Moth, one of the most destructive pests around our district, and at the same time enumerated the advantages dusting seemed to have. My resolution was suddenly taken to get a large, powerful duster, and after the fire that consumed our monastery and my spraying gasoline outfit, which was winter-

ing in our cellars, I bought a Niagara Dusting machine and have had no reason since to regret it. Since then we used this outfit in our orchards and on our potatoes with great success and on account of an educational point of view, I have purchased a powerful bean spraying rig. I am satisfied that in a large orchard like ours, and especially in certain seasons, when the time factor is the all-important one, dusting has come to stay in our Province. Let me say again that in our orchards the Codling moth is the most destructive pest we have to control, in other districts it is the Curculio. but at home we have no trouble with the latter pest.

Things were running rather smoothly in our Province, and Mr. Petch and myself were making comparisons in dusting and spraying our orchards. and we had all confidence in lime sulphur wash as a fungicide, when our friend Mr. George Sanders sprung a surprise on us, in a paper he read before our Society in convention at Macdonald College, on the 5th of December 1917. Mr. Sanders, in due justice to this paper, took the precaution to state that what he told us was applied to Nova Scotia conditions as he could not pronounce himself about conditions in Quebec. However, his stand against lime sulphur wash, especially in combination with arsenate of lead, was so strong and his talking for Bordeaux so convincing that we could not help thinking that his opinion would have some strong weight upon such practical fruit-growers and Entomologists as were there hearing him. I can but mention Prof. Macoun and Dr. Hewitt. You remember that his thesis was that lime sulphur did actually spray the apples of the trees.

I went back to Oka with the idea of putting on again some practical experiments to determine, for my own use, if that thesis was true even in using the new spray gun and power behind it. I will not relate here that experiment, which you can find in full in the report of the Entomological Society of Ontario in 1919. The orchard was well chosen, all varieties being the same (Wealthies), the bloom on all plots being excellent. On the first plot, we used Boardeaux mixture, 4-4-40. the usual one. sprayed on the trees; we dusted sulphur-talc and arsenate of lead, 40-50-10 on the second plot, sprayed lime sulphur-arsenate of lead on the third plot; dusted dry Bordeaux and calcium arsenate on the fourth plot; sprayed the new formula of Bordeaux mixture, 2-10-40, on the 5th plot, and dusted my own combination of sulphur-hydrated lime and arsenate of lime, 15-80-5. on the 6th and last plot. The cheapest dusting mixture was the last one. No injury whatever was noticed either on the lime-sulphur-arsenate of lead plot or the dusted sulphur-hydrated lime and calcium arsenate plots. We cannot therefore advocate returning to Bordeaux mixture in our Province, as we had such a large crop of apples that year on the lime sulphur plot that we had to thin them.

We use exclusively now in our sprayings or dusting propositions arsenate of lime as a contact poison in combination with either lime sulphur or the dry sulphur when dusted on the trees, adding hydrated lime in the last case to safeguard the application and reduce the costs as a filler. In orchards where the scab is not really bad, we do not use much sulphur and find that 5 lbs. of calcium arsenate will control effectively Codling Moth when we do not get, like the past season, an outbreak of a second brood.

I may add that dry Bordeaux is freely used also in the Province but even there we get the russetting from the Bordeaux which we avoid with the lime sulphur spray.

Last year a committee appointed by our Society, with Prof. Bunting of Macdonald College as chairman, Prof. Dickson, Prof. Lochhead, Mr. Petch and the writer on the board, printed a Calendar which Macdonald College sent out all over the Province.

THE ENTOMOLOGICAL RECORD, 1921.

Norman Criddle, Ottawa.

The Entomological Record was begun in the year 1901 by Dr. James Fletcher, then Dominion Entomologist. It was originated, primarily, with the idea of encouraging Canadian collectors and of bringing them in closer contact with each other's work. It included in its scope the recording of rare species, a list of persons actually engaged in insect studies, a review of entomological books issued during the year, and such other matter as was considered of special value to Canadians.

The original scheme has been maintained in all the succeeding issues with such modifications as seemed desirable or became necessary, and we believe the publication has fully served the purpose its originator had in view. Many things have taken place during the twenty years the Record has been in existence. Its founder, that "Prince of Good Fellows", has gone, and with him many of the handicaps which he and other entomologists then laboured under. Entomology has advanced by leaps and bounds since then, and it has largely become a professional rather than an amateur pursuit. In other words, the labour of love has to some extent become a labour for dollars and cents. Nevertheless, I believe the old spirit is still with us; but are our needs the same?

Active societies are now publishing their own lists of species; collectors in some instances are doing likewise; publications once few in number and difficult to procure, are now scattered broadcast over the land; hundreds of species have been described that were unknown in 1901, and untold numbers more have been identified for collectors.

Noting all these changes the question arises as to whether the Record has fulfilled its place and in the course of entomological evolution has ceased to be of practical value to its readers. We leave this question in their hands.

The preparation of the Entomological Record is a task of considerable labour, and it occupies time that might be profitably employed in other ways. Collectors could assist considerably in reducing this labour by putting records in as good order as possible. In many instances there are local lists available. In such cases it is as easy for the collector to sort out his new records from those already published as it is for the compiler. Secondly, many of the check lists are numbered and in these cases adding the number to the species is desirable. Thirdly, lists of captures should be arranged as nearly as possible in the order of check lists. In addition localities should be supplied and authority given for the determination of species. By following these outlines the collector would save the compiler much time and labour and unless some aid is supplied the Record must cease for lack of time to prepare it.

We are again under deep obligation to our many friends in the United States and Great Britain for assistance in the determination of specimens. There is hardly a specialist that has not helped us in some way and we extend to all hearty appreciation.

The 1920 Record has been delayed beyond all expectation by the printers' strike and since at the time of writing it is still in the hands of the printers, we fear that this paper will also be retarded.

It has been thought advisable to discontinue the book review for lack of time and space. As a rule all such publications are reviewed in the various entomological periodicals. We cannot, however, refrain from noting the appearance of Leng's List of Coleoptera published by John D. Sherman, Mount Vernon, N.Y. This important publication is indispensable to Coleopterists.

The season of 1921 does not appear to have been a good one for collecting. This applies particularly to the east and extreme west. On the Prairies insect prevalence seems to have been maintained though there was a scarcity of Noctuid moths in Manitoba.

NOTES OF CAPTURES.

Species preceded by an asterisk (*) described during 1921).

Lepidoptera.

(Arranged according to Barnes and McDunnough's Check List of the Lepidoptera of Boreal America, 1917).

Pieridæ

40. *Euchloe ausonides* Bdv. Slave Falls, Winnipeg River, May 24, 1921, (J. D. Suffield).

57c. *Eurymus hecla pallida* S. & M. Nordegg. Alta., June, 1919, (K. Bowman).

65. *Eurymus alexandra* Edw. Nordegg, Alta., July, 1917, (Bowman); 1921. (McDunnough).

69. *Eurymus nastes streckeri* Gr. Lillooet, B.C., August, (G. O. Day).

Nymphalidæ

187. *Brenthis myrina* Cram. Godbout, Que.. (E. M. Walker).

305. *Basilarchia arthemis* Dru. Waugh, Man., July 1, 1921, (R. S. Brooks).

305a. *Basilarchia arthemis rubrofasciata* B. & McD. Waugh, Man., July 1, 1921, (Brooks).

306. *Basilarchia lorquini ab. eavesi* Hy. Edw. Hillcrest, Alta., June, 1921. (Bowman).

Lycaenidæ

393. *Erora laeta* Edw. 16 Island Lake, Que., May 18, (Miss J. B. Muir).

394. *Callipsyche behri* Edw. Penticton, B.C., June 2, (J. A. Corcoran).

411. *Heodes cupreus* Edw. Lillooet, B.C., August, 1921, (Day).

* *Strymon melinus atrofasciata* McD. Wellington, B.C., July 12, 1904, (G. W. Taylor); Duncan, B.C., (C. Livingstone); Royal Oak, B.C., May 26, 1917; Victoria, B.C., May.
Can. Ent., Vol. LIII. No. 2, 1921.

426. *Plebeius scudderi* Edw. Winnipeg Beach, Man., July 20, (J. D. Suffield).

437. *Plebeius lupini* Bdv. Blairmore, Alta., June, 1918; Hillcrest, Alta., June, 1921; Mt. McLean, B.C., (Hanham).
Acmon in Dod's list is probably this (Bowman).

449. *Glaucopsyche lygdamus columbia* Skin. Hillcrest, Alta., June, 1920-21. (Bowman).

Hesperiidæ

598. *Atrytone lagus* Edw. Aweme, Man., July 15, 1921, (N. Criddle).

Sphingidæ

691. *Sphinx canadensis* Bdv. Winnipeg, Man., (Whitehead).

742. *Pholus labruscæ* Linn. Winnipeg, Man., October 20, (J. B. Wallis).
753. *Proserpinus flavofasciata* Wlk. Victoria Beach, Man., June 20, (Wallis).

Ceratocampidæ

* *Anisota manitobensis* McD. Aweme, Man., June-July, (N. and E. Criddle); Winnipeg, Man., (Whitehead and Suffield).
Can. Ent. Vol. LIII; No. 4, 1921.

Arctiidæ

* *Neoarctia sordida* McD. Banff, Alta., June 13, 1914, (N. B. Sanson).
860. *Crambidia casta* Sanb. Quamichan, B.C., September, 1921, (Day).

Noctuidæ

1210. *Canthylidia scutosa* Schf. Lethbridge, Alta., July 12, 1921, (Strickland and Seamans).
1226. *Orosagrotis incognita* Sm. Mt. McLean, B.C., 7,000 feet, August. (Hanham).
1274a. *Euxoa rufula basiflava* Sm. Lake Louise, Alta, August, 1921, (Bowman).
1315. *Euxoa quinquelinea* Sm. Mt. McLean, B.C., 7500 feet, August, (Hanham).
1342. *Euxoa colata* Grt. Mt. McLean, B.C., 7500 feet; August, (Hanham).
1525. *Anytus evelina* French. Lethbridge, Alta., (Seamans).
* *Anomogyna partita* McD. Banff, Alta., July 4, (Wallis); Kalso, B.C., July 24 and August 7, (J. W. Cockle); Nordegg, Alta., June 23, 1921, (McDunnough).
* *Anomogyna homogena* McD. Banff, Alta., Sept. 5, 1911. (Sanson); Pocahontas and Nordegg, Alta., August. (Bowman).
Can. Ent. Vol. LIII, No. 8, 1921.
1548. *Mythimna olivata* Harv. Lake Louise ,Alta., August, 1921, (Bowman).
1642. *Anarta hampa* Sm. Mt. McLean, B.C., 7500 feet, August, (Hanham).
1652. *Lasionycta subfuscula* Grt. Hillcrest, Alta., June, 1921, (Bowman).
1653. *Lasionycta sedilis* Sm. Mt. McLean, B.C., 7500 feet, August, (Hanham).
1789. *Trichoclea fuscolutea* Sm. Lethbridge, Alta., (Strickland and Seamans).
1905. *Orthosia mys* Dyar. Quamichan, B.C., October, 1917, (Day).
2018. *Oncocnemis hayesi* Grt. Mt. McLean, B.C., August, (Hanham).
2061. *Oncocnemis atrifasciata* Morr., Mt. McLean, B.C., (Hanham).
2064. *Oncocnemis major* Grt. Lethbridge, Alta., (Strickland and Seamans).
2096. *Feralia jocosa* Gn. Hudson, Que., May 7th, (Winn).
2439. *Acronycta marmorata* Sm. Quamichan, B.C., (Day).
2513. *Merolonche ursina* Dyar. Aweme, Man., 1921, (Criddle).
2559. *Hadenella pergentilis* Grt. Lethbridge, Alta., (Seamans).
2588. *Platyperigea anotha* Dyar. Lake Louise, Alta., August, 1921, (Bowman).
2615. *Xylomoea didonea* Sm. Lethbridge, Alta., (Seamans).
2930. *Spragueia leo* Gn. Aweme, Man., (Criddle).
3222. *Syngrapha alticola* Wlk., Mt. McLean, B.C., 7500 feet, August, (Hanham).
3227. *Autographa diasema* Bdv. Nordegg, Alta., 1916, (Bowman); July, 1921, (McDunnough and Bowman).
3245. *Autographa v-alba* Ottol. Mt. McLean, B.C., 6000 feet, August, (Hanham).

Lymantriidæ

* *Hemerocampa pseudotsugata* McD., Chase, B.C., (W. B. Anderson).
Can. Ent. Vol. LIII, No. 3, 1921.

Lasiocampidæ

3750. *Malacosoma pluvialis* Dyar. Nordegg, Alta., July, 1921 (McDunnough and Bowman).

Geometridæ

3945a. *Carsia paludata alpinata* Pack. Lake Louise, August, 1921, (Bowman); Mt. McLean, B.C., (Hanham).

3984. *Lygris atrifasciata* Hlst. Quamichan, B.C., August, 1919, (Day).

4002. *Dysstroma formosa* Hlst. Lillooet, B.C., July 1919, (Day).

4601. *Aethaloptera anticaria fumata* B. & McD. Edmonton, Alta., May, 1921. (D. Mackie).

4627. *Erannis vancouverensis* Hlst. Edmonton, Alta., 1921, (Bowman and Mackie).

4670. *Plagodis approximaria* Dyar. Quamichan Lake, B.C., May 30, 1920, (Hanham).

Pyralidæ

4933. *Diastictis argyralis* Hbn. Lethbridge, Alta., 1921 (Seamans).

4994. *Evergestis subterminalis* B. & McD. Lillooet, B.C., August, 1921. (Day)

4996. *Evergestis simulatalis* Grt. Lillooet, B.C., August, 1921, (Day).

5182. *Noctuelia thalialis* Wlk. Edmonton, Alta., July, 1921. (Bowman).

* *Crambus tutillus* McD., Victoria B.C., May 12-28, (W. Downes).

* *Crambus awemellus* McD. Aweme, Man., August 8, 1920, (N. Criddle). The above two species described in Can. Ent. Vol. LIII, 1921.

5473. *Jocara breviornatalis* Grt. Lethbridge, Alta., (Strickland).

Pterophoridæ

5859. *Oxyptilus ningoris* Wlshm. Cowichan Lake, B.C., June 18 1913, (Day).

5862. *Platyptilia edwardsii* Fish. Lillooet,, B.C., August, 1921, (Day).

5888. *Platyptilia modesta* Wlshm. Aweme, Man., June, 1921, (Criddle).

* *Platyptilia albertae* B. & L. Laggan, Alta., August; Mt. Cheam, B.C., August, (Blackmore).

* *Oidaematophorus corvus* B. & L. British Columbia, July and August. The above two species described in Cont. Nat. His. Lep. Vol. IV, No. 4, 1921, by Barnes and Lindsey.

5898. *Pterorphorus mathewianus* Zell. Lillooet, B.C., August, 1921, (Day).

Oecophoridæ

* *Agonopteryx blackmori* Busck. Victoria, B.C. (Blackmore). Can. Ent. Vol. LIII, No. 12 1921.

Aegeriidæ

6751. *Paranthrene polistiformis* Harris. Calgary, Alta., July, 1920, (Hincke). Hillcrest, Alta., June, 1921, (Bowman).

Eucosmidæ

6864. *Argyroploce campestrana* Zell. Lillooet, B.C., July, 1919, (Day).

7100. *Eucosma montanana* Wlshm. Lillooet, B.C., August, 1921, (Day).

7224. *Laspeyresia albimaculana* Fern. Aweme, Man., May 11, 1921, (Criddle).

Tortricidæ

* *Cacoccia victoriana* Busck. Victoria and Goldstream, B.C., (Blackmore). Can. Ent. Vol. LIII, 1921.

7402. *Cnephasia argentana* Cl. Mt. McLean, B.C., 5000 feet. August, (Hanham.

Yponomeutidæ

* *Argyresthia monochromella* Busck. Victoria, B.C., (Blackmore). Can. Ent. Vol. LIII. No. 12, 1921.

Glyphipterygidæ

* *Hilarographa youngiella* Busck. Departure Bay, B.C., (Young); Victoria, B.C., (Downes).
Can. Ent. Vol. LIII, No. 12, 1921.

Elachistidæ

* *Elachista* (*Aphelosetia*) *cygnodiella* Busck. Victoria, B.C., (Downes). Can. Ent. Vol. LIII, No. 12, 1921.

Hepialidæ

8487a. *Hepialus pulcher macglashani* Hy. Edw. Mt. McLean, B.C., 7500 feet, August 21, 1920. (Hanham).

COLEOPTERA

Arranged according to Leng's Catalogue of the Coleoptera of America north of Mexico—1920.

Carabidæ

241. *Loricera caerulescens* Linn. Edmonton, Alta., May 12, 1919, (F. S. Carr).
274. *Nebria metallica* Fisch. Peachland, B.C., July 17, 1921, (W. Metcalf).
276. *Nebria sahlbergi* Fisch. Godbout, Quebec, (E. M. Walker).
346. *Dyschirius pallipennis* Say. Berthierville, Quebec, June, (J. Ouellet).
540. *Bembidion transversale* Dej. Edmonton, Alta., Sept. 4, 1920, (F. S. Carr).
681. *Bembidion dentellum* Thunb. Edmonton, Alta., May 7, 1917, (F. S. Carr).
683. *Bembidion insulatum* Lec. Baldur, Manitoba, (N. Criddle).
902. *Patrobus septentrionis* Dej. Peachland, B.C., August 17, 1919, (W. Metcalf).
1489. *Pristodactyla impunctata* Say. Peachland, B.C., July 27, 1919, (Metcalf).
1548. *Platynus corvus* Lec. Edmonton, Alta., May 5, 1919. (Carr).
1586. *Platynus gemellus* Lec. Edmonton, Alta., June 3, 1918, (Carr).
1642. *Lebia pulchella* Dej. Edmonton, Alta., Oct. 21, 1919, (Carr).
1646. *Lebia atriceps* Lec. Aweme, Man., October 17, 1921, (N. Criddle).
1742. *Cymindis planipennis* Lec. Brooks, Alta., August, 1921, (Carr).
Stenolophus fidelis Csy. Peachland, B.C., July 18, 1919, (Metcalf).
2087. *Anisodactylus harrisi* Lec. Cawston, B.C., May 24, 1917, (Metcalf).

Dytiscidæ

2414. *Coelambus sellatus* Lec. Castar, Alta., September, (Carr).
2428. *Deronectes depressus* Fabr. Edmonton, Alta., August 29, 1919, (Carr).
2454. *Hydroporus consimilis* Lec. Castar, Alta., October, 9, 1920, (Carr).
2466. *Hydroporus sericeus* Lec. Castar, Alta., October 9, 1920, (Carr).
2616. *Rhantus binotatus* Harr. Edmonton, Alta., September 11, 1920, (Carr).
2649. *Hydaticus piceus* Lec. Winnipeg, Man., May 8, 1920, (J. B. Wallis); Edmonton, Alta., August 4, 1917, (Carr).
2660. *Graphoderes fasciatocollis* Harr. Peachland, B.C., August 7, 1919, (Metcalf).

Gyrinidæ

2685. *Gyrinus confinis* Lec. Berthierville, Que., June, (J. Ouellet).
2701. *Gyrinus opacus* Sahl. Edmonton, Alta., April 27, 1919, (Carr).

Hydrophilidæ

2754. *Hydrochus scabratus* Muls. St. Renni, Que., May, (J. Ouellet).

Silphidæ

2945. *Catoptrichus frankenhaeuseri* Mann., Peachland, B.C., Aug. 16, 1919, (Metcalf).

2947. *Choleva luridipennis* Mann. Peachland, B.C., Aug. 16, 1919. In fungus. (Metcalf).

2949. *Choleva gratiosa* Blanch. Peachland, B.C., Aug., 1919. In fungus. (Metcalf).

2951. *Choleva spenciana* Kby. Peachland, B.C., Aug., 1919. In fungus. (Metcalf).

2953. *Choleva hornana* Blanch. Peachland, B.C., Aug., 1919. In fungus. (Metcalf).

2955. *Choleva terminans* Lec. Peachland, B.C., Aug., 1919. In fungus.

Schydmæninæ

3066. *Euconnus similis* Blatch. Edmonton, Alta., June 28, 1919, (Carr).

Staphylinidæ

4314. *Gyrophypnus pusillus* Sach. Outremont, Que., May—June, (J. Ouellet).

4638. *Oxyparus occipitalis* Fauv. Cawston, B.C., May 13, 1919. (Metcalf).

4739. *Bolitobius cincticollis* Say. Edmonton, Alta., Aug. 27, 1919, (Carr).

4840. *Placusa tacomae* Csy. Peachland, B.C., July 13, 1919; Victoria Beach, Man., June 19, 1920. (Wallis).

4936. *Goniusa obtusa* Lec. Aweme, Man., May 17, 1919. (Criddle).

Gyrophaena rara Payk. Peachland, B.C., July 13, 1919, (Wallis).

5068. *Trichiusa postica* Csy. Winnipeg, Man., April 21, 1917. New to Man., (Wallis).

5102. *Atheta coriaria* Kr. Peachland, B.C., Aug. 16, 1919. In fungus. (Wallis).

5119. *Atheta oregonensis* Bnhr. Peachland, B.C., Aug. 16, 1919, (Wallis).

5120. *Atheta frosti* Bnhr. Peachland, B.C., Aug. 16, 1919. Fenyes reports this as not quite typical (Wallis).

5124. *Atheta metlakatlana* Bnhr. Peachland, B.C., July 13, 1919, (Wallis).

5125. *Atheta relicta* Csy. Peachland, B.C., July—Aug., 1919. In fungus. (Wallis).

5288. *Atheta militaris* Bnhr. Peachland, B.C., Aug. 16, 1919, (Wallis).

5296. *Atheta impressipennis* Bnhr. Rosebank, Man., June 16, 1917; Stonewall, Man., April 27. In ants' nests. (Wallis).

Dinaraea angustula Gyll. Winnipeg, Man., May 25, 1920, (Wallis).

5417. *Metaxya subpolaris* Fenyes. Stonewall, Man., May 2, 1920. Determined by Fenyes with some doubt. (Wallis).

5504. *Datomicra celata* Er. Peachland, B.C., Aug. 16, 1919, (Wallis).

5540. *Dimetrota macklini* Feny. Peachland, B.C., Aug. 16, 1919. In fungus (Wallis).

5544. *Dimetrota cursor* Makl. Peachland, B.C., Aug. 16, 1919. Winnipeg, Man., Oct. 4, 1919. In fungus. (Wallis).

5545. *Dimetrota recondita* Er. Peachland, B.C., July 6, 1919. (Wallis).

5709. *Gnypeto helenae* Csy. Peachland, B.C., July, 1919. (Wallis).

* *Cyphea wallisi* Feny. Winnipeg, Man., April 15, 1916.

* *Strophogasta penicillata* Feny. Stonewall, Man., Aug. 18, 1918. In fungus.

* *Aleochara purturbans* Feny. Treesbank, Man., May 18, 1918, (Wallis). The above three species described in Bull. Mus. of Comp. Zoology, Harvard, Vol. LXV, No. 2, 1921.

6028. *Phloeopora inquilina* Csy. Stonewall, Man., April 27, 1919. Among ants. (Wallis).

Histeridæ

6766. *Plegaderus nitidus* Horn. Peachland, B.C., July 13, 1919. In galleries of Ipidae. (Wallis).

6827. *Saprinus lugens* Er. Edmonton, Alta., June 28, 1921. (Carr).

6830. *Saprinus profusus* Csy. Aweme East, Man., July 9, 1920. New to Man., (Wallis).

Melyridæ

7203. *Collops hirtellus* Lec. Cawston, B.C., May 18, 1917. (Metcalf).

* *Listrus provincialis* Blais. Spinous Creek, B.C., (Ralph Hopping). Can. Ent. Vol. LIII, No. 6, 1921.

7430. *Listrus interruptus* Lec. Cawston, B.C., May 18, 1917. (Metcalf).

Mordellidæ

* *Mordellistena incommunis* Lilj. Aweme, Man., June 19, (Criddle). Can. Ent. Vol. LIII, No. 8, 1921.

Elateridæ

8557. *Adelocera brevicornis* Lec. Winnipeg, Man., (F. Dolman).

8966. *Elater socer* Lec. Onah, Man., July 13, 1920, (Wallis).

* *Melanotus hislopi* Zwal. Toronto, Ont., May 22, (R. J. Crew). Proc. Ent. Soc. Wash. Vol. 23, No. 9, 1921.

Buprestidæ

9207. *Chrysophana placida* Lec. British Columbia. Previously recorded as *Melanophila gentilis* (Hanham).

9338. *Dicerca pectorosa* Lec. Peachland, B.C., June 17, 1920, (Metcalf).

9360. *Buprestis sulcicollis* Lee. Godbout, Que., (E. M. Walker).

9397. *Anthaxia deleta* Lec. Lillooet, B.C., July, 1919, (Hanham).

Dryopidæ

9586. *Lara avara* Lec. Lillooet, B.C., July, 1919. (Hanham).

9604. *Helichus fastigiatus* Say. Treesbank, Man., August and October, 1921. (E. and N. Criddle).

Helmidæ

9615. *Helmis vittata* Melsh. Edmonton, Alta., July 9, 1920, (Carr).

Heteroceridæ

9646. *Heterocerus undatus* Melsh. Peachland, B.C., July 18, 1919. (Wallis).

9648. *Heterocerus brunneus* Melsh. Peachland, B.C., July 18, 1919. (Wallis).

Dascillidæ

9657. *Macropogon piceus* Lec. Cawston, B.C., June 17, 1917, (Metcalf).

Dermestidæ

9757. *Novelsis perplexus* Jayne. Peachland, B.C., July 24, (Metcalf).

Ostomidæ

9994. *Tenebroides corticalis* Melsh. Castor, Alta., April 11, 1920, (Carr).

Nitidulidæ

10013. *Cateretes sericans* Lec. Cawston, B.C., July 2, 1917, (Metcalf).

10024. *Meligethes aeneus* Fab. Cawston, B.C., July 5, 1917. (Metcalf).

Cucujidæ

10273. *Brontes dubius* Fab. Cawston, B.C., July 17, 1917. (Metcalf).

Mycetophagidæ

10503. *Mycetophagus bipustulatus* Melsh. Aweme, Man., Aug. 30, 1921, (E. Criddle).

Colydiidæ

Aulomium longum Lee. Peachland, B.C., Aug. 13, 1919, (Wallis).

Endomychidæ

Mycetina idahoensis Fall. Cawston, B.C., April 15, 1917, (Metcalf).

Coccinellidæ

10874. *Hyperaspis lateralis* Muls. Cawston, B.C., Aug. 17, 1917, (Metcalf).
10954. *Hyperaspis vittigera* Lec. Cawston, B.C., July, 1917, (Metcalf).
10972b. *Brachyacantha uteela* Csy. Edmonton, Alta., June 5, 1920, (Carr).
11076. *Scymnus coniferarum* Cr. Cawston, B.C., March 11, 1917, (Metcalf).
11096. *Scymnus naviculatus* Csy. Edmonton, Alta., June 18, 1919, (Carr).

Alleculidæ

11322. *Mycetochara fraterna* Say. Aweme, Man., July—August, (E. and N. Criddle).
11324. *Mycetochara megalops* Csy. Aweme East, Man., July 5, 1920, (Criddle).

Tenebrionidæ

* *Eleodes vandykii* var. *modificata* Blais. Vernon, B.C., April 6, 1920, (Hopping).
Can. Ent. Vol. LIII, No. 6, 1921.
12298. *Eleates explanatus* Csy. Peachland, B.C., Aug. 7, 1919. On fungus. (Wallis).
12372. *Hypophloeus substriatus* Lec. Peachland, B.C., July; Winnipeg, Man., August, (Wallis).
12374. *Hypophloeus parallelus* Melsh. Peachland, B.C., July 15, 1919, (Wallis).

Melandryidæ

12566. *Scotochroa basalis* Lec. Peachland, B.C., Aug. 3, 1919, (Wallis).

Anobiidæ

12689. *Sitodrepa panicea* Linn. Edmonton, Alta., March, 1920, (Carr).

Cerambycidæ

14123. *Tetropium abietis* Fall. Victoria, B.C., July 9, 1915, (Wallis).
14396. *Acmaeops pratensis* Laich. Edmonton, Alta., July 2, 1920, (Carr).
14420. *Anthophilax mirificus* Bland. Hillcrest, Alta., June 19, 1920.
14514. *Leptura nigrella* Say. Nordegg, Alta., August.
14584. *Molorchus longicollis* Lec. Lillooet, B.C., July, 1919, (Hanham).
14625. *Callidium frigidum* Csy. Thornhill, Man., July 19, (J. South).
14968. *Leiopus variegatus* Hald. Edmonton, Alta., July 18, 1921.

Chrysomelidæ

15204. *Donacia curticollis* Knob. Rigaud, Que., July, (J. Ouellet).
15239. *Lema brunnicollis* Lac. Edmonton, Alta., June 29, 1918, (Carr).
15481. *Cryptocephalus sanguinicollis* Suffr. Cawston, B.C., July, (Metcalf).
15703. *Gastroidea cyanea* Melsh. Peachland, B.C.
15713. *Phytodecta arctica* Mann. Mt. McLean, B.C. 7500 feet, (Hanham).
15724. *Trirhabda canadensis* Kby. Brooks, Alta., Aug. 21, (Carr).
15733. *Trirhabda convergens* Lec. Rigaud, Que., August, (J. Ouellet).
15745. *Galerucella sexvittata* Lec. Aweme, Man., Aug. 15, 1921. On Solidago. (Criddle).
16016. *Chaetocnema confinis* Cr. Stonewall, Man., Sept. 6, 1918. New to Man. (Wallis).
16086. *Dibolia borealis* Chev. Norman, Ont., July-August, (B.M. Bradshaw).

Mylabridæ

16232. *Mylabris fraterculus* Horn. Edmonton, Alta., July 3, 1919. (Carr).

Curculionidæ

16392. *Apion pennsylvanicum* Boh. Cawston, B.C., July 29, 1917. On wild parsnip. (Metcalf).

16480. *Apion centrale* Fall. Cawston, B.C., June 15, 1917, (Metcalf).
16584. *Panscopus aequalis* Horn. Cawston, B.C., June 3, 1917, (Metcalf).
16679. *Brachyrhinus rugifrons* Gyll. Mission, B.C., On strawberry (R. Glendenning).
16872. *Hyperodes humilis* Gyll. Edmonton, Alta., June 6, 1918, (Carr).
16897. *Dorytomus parvicollis* Csy. Edmonton, Alta., July 9, 1915, (Carr).
16910. *Dorytomus vagenotatus* Csy. Edmonton, Alta., June 12, 1920, (Carr).
16922. *Notaris puncticollis* Lec. Edmonton, Alta., June 12, 1918, (Carr).
17036. *Bagous restrictus* Lec. Peachland, B.C., July 18, 1919, (Wallis).
17334. *Elleschus scanicus* Payk. Edmonton, Alta., April 4, 1915, (Carr).
17338. *Orchestes salicis* Linn. Cawston, B.C., July 15, (Metcalf); Edmonton, Alta., June 26, 1918, (Carr).
17345. *Orchestes pallicornis* Say. Edmonton, Alta., July 2, 1919, (Carr).
17842. *Rhinoncus pyrrhopus* Boh. Peachland, B.C., July 27, 1919, (Wallis).
18209. *Phthorophloeus piceae* Swaine. Edmonton, Alta., Sept. 2, 1916, (Carr).

Diptera

Arranged according to a Catalogue of North America Diptera by J. M. Aldrich. The numbers refer to the pages of the catalogue.

Tipulidæ

* *Tipula beaulieui* Dietz. Ottawa, Ont., 1912, (G. Beaulieu). Ent. News, Vol. XXXII, No. 10, 1921.

Culicidæ

Culex tarsalis Coq. Aweme, Man., July 28—31, 1921, (H. A. Robertson). New to Manitoba.

Culex territans Walk. Aweme, Man., Aug. 1, 1921, (H. A. Robertson). New to Manitoba.

Aedes intrudens Dyar. Aweme, Man., May 23—26, 1921, (Robertson).

Aedes canadensis Theo. Douglas and Glenora, Man., July, 1921, (Robertson).

Aedes curriei Coq. Aweme and Delta, Man., August—October, 1921, (Robertson).

Ades campestris D. & K. Aweme, Oberon and Westburne, Man., June, August, 1921, (Robertson).

Mycetophilidæ

139. *Platyura elegans* Coq., Joliette, Que., July 13, 1921, (J. Ouellet).

Tabanidæ

* *Tabanus trepidus* McD. Ottawa, Ont., (W. Metcalf); Shelburne, N.S., July, (A. Gibson); Harcourt, N.B.; Fort Coulonge, Que., (J. I. Beaulne); Aweme, Man., (Criddle); Peachland, B.C., (Wallis).

* *Tabanus nudus* McD. Mer Bleue, Ont., June, 1908; Fredericton and St. Stephen, N.B.; Ottawa, Ont.; Aweme, Man.; Saskatchewan; British Columbia.

* *Tabanus rupestris* McD. Cowley, Alta., (R. N. Chrystal).

* *Tabanus atrobasis* McD. Mt. Lehman, B.C., June 30; (S. Hadwen); Victoria and Royal Oak, B.C.,

The above four species described in Can. Ent. Vol. LIII, No. 6, 1921.

Bombyliidæ

* *Calopelta fallax* Green. Royal Oak, B.C., May 9, 1917, (R. C. Treherne). Proc. Ent. Soc. Wash., Vol. 23, No. 1, 1921.

Asilidæ

262. *Stichopogon argenteus* Say. Onah, Man., July-August, 1920, (Vroom and Criddle).

Empididæ

318. *Syneches rufus* Loew. Joliette, Que., July 13-17, 1921, (J. Ouellet).

319. *Leptopeza flavipes* Mg. Mount Royal, Que., May 28, 1921. (J. Ouellet).

Dolichopodidæ

375. *Hilara mutabilis* Loew. Joliette, Que., July 13, 1920, (J. Ouellet).

Lonchopteridæ

339. *Gymnophora arcuata* Stein. Joliette, Que., July 13, 1920. (J. Ouellet).

Syrphidæ

We are indebted to Mr. C. Howard Curran for the following list of Syrphidæ.

353. *Chilosia plumata* Loew. Orillia, Ont., May-June. (Curran).

353. *Chilosia petulca* Will. Guelph, Ont.

352. *Chilosia capillata* Loew. Orillia, Ont., June, (Curran).

Chilosia prima Hunter. Orillia, Ont., May 7-29, 1921, (Curran).

* *Cnemodon carinata* Curr. Guelph and Jordan, Ont., June, (Curran)

* *Cnemodon longiseta* Curr. Jordan, Ont., June-July; Orillia, Ont., June, 1921, (Curran).

* *Cnemodon squamula* Curr. Jordan, Ont., May 16, 1920, (Curran).

* *Cnemodon cevelata* Curr. Guelph, Jordan and Orillia, Ont., (Curran).

* *Cnemodon elongata* Curr. Orillia, Ont., June 22; Jordan, Ont., June 15, 1919, (Curran).

* *Cnemodon coxalis* Curr. Guelph, Orillia and Jordan, Ont., May-September, (Curran).

350. *Cnemodon pisticoides* Will. Orillia and Jordan, Ont., June, August, (Curran).

* *Cnemodon auripleura* Curr. Cranbrook, B.C., (C. B. D. Garrett).

* *Cnemodon carinata* Curr. Guelph and Jordan, Ont., June, (Curran).

* *Cnemodon venteris* Curr. Jordan, Ont., June, (Curran).

* *Cnemodon myerma* Curr. Jordan, Ont., June, (Curran).

* *Cnemodon ontarioensis* Curr. Guelph and Jordan, Ont., June, (Curran).

* *Heringia canadensis* Curr. Guelph, Ont., June 15, 1919, (Curran).

* *Heringia intensica* Curr. Jordan, Ont., June 15, 1919, (Curran).

* *Pipiza vanduzeei* Curr. Cranbrook, B.C., June, (C. B. D. Garrett).

350. *Pipiza puella* Will. Orillia and Jordan, Ont., May, June, (Curran).

Pipiza quadrimaculata Pz. Orillia, Ont., June 8, 1914, (Curran).

* *Pipiza tricolor* Curr. Orillia and Jordan, Ont., May, June, (Curran).

* *Pipiza severnensis* Curr. Severn, Ont., July 31, 1913. (Curran).

The above new species were described in Proc. Calif. Acad. Sci., Vol. XI, pp. 345-393, 1921.

* *Melanostoma squamula* Curr. Victoria, B.C., April-May.

* *Melanostoma chilosia* Curr. Banff, Alta., (N. B. Sanson).

* *Melanostoma lata* Curr. White Horse, Yukon Territory, (A. P. Hawes).

The above three species described in Can. Ent. Vol. LIII, No. 12, 1921.

Paragus auricaudatus Bigot. British Columbia, 1919, (E. R. Buckell). Distinct from *P. tibialis* (Curran).

Crysogaster texana Shan. Orillia, Ont., May, June—on Crataegus blossoms (Curran).

Platychirus perpallidus Verrall. Ogema, Sask., June 17, 1916, (Criddle); Fredericton, N.B., July 5, 1913, (J. D. Tothill).

Platychirus scutatus Meig. British Columbia, (Garrett).

Platychirus discimanus Loew. Orillia Ont., April 24, 1921, (Curran). Aylmer, Que., May 13, 1921, (J. McDunnough).

Syrphus venustus Meig. Orillia, Ont., May 3, 1921, on bloom of *Osmorrhiza claytoni* (Curran).

367. *Syrphus pauxillus* Will. Orillia, Ont., May, 1921. On *Caltha* (Curran).

366. *Syrphus mentalis* Will. Orillia, Ont., May. On plum flowers, (Curran).

Syrphus cinctus Fall. Orillia, Ont., April. A European species not previously recorded for North America.

* *Syrphus invigorus* Curr. Orillia, Ont., May 5-30. On Wild Plum (Curran).

Syrphus americanus var. *vinelandi* Curr. Jordan and Orillia, Ont., May to August (Curran).

* *Syrphus americanus* var. *pomus* Curr. Jordan and Orillia, Ont., June 29, 1919, (Curran).

Syrphus nitidicollis Meig. Orillia, Ont., May, 1921. (Curran).

* *Syrphus rectoides* Curr. Cranbrook and Bull River, B.C., (Garrett).

366. *Syrphus mentalis* Will. Orillia, Ont., May. On plum flowers, (Curran). May 5, (J. McDunnough).

* *Syrphus transversalis* Curr. Orillia, Ont., May to September. (Curran).

* *Syrphus reflectipennis* Curr. Orillia, Ont., May 26, 1913, (Curran). The above six species described in Can. Ent. Vol. LIII, Nos. 7 and 8, 1921.

Syrphus lineola Zett. Glacier, B.C., July 5, 1915, (J. B. Wallis). A European species not previously recorded for North America (Curran).

Syrphus medius Jones. Orillia, Ont., May-June, (Curran).

362. *Leucozona lucorum* L. McDiarmid, Ont., (N. K. Bigelow).

Didea laxa O. S. McDiarmid, Ont., June 10, 1921, (N. K. Bigelow). New to Ontario, (Curran).

355. *Baccha cognata* Loew. Orillia, Ont., June 28, 1921, (Curran).

357. *Ocyptamus fuscipennis* Say. Point Pelee, Ont., (Bigelow).

* *Toxomerus occidentalis* Curr. British Columbia. Can. Ent. Vol. LIII, No. 11, 1921.

375. *Ascia metallica* Will. Orillia, Ont., April-May. This is apparently quite a distinct species. (Curran).

374. *Sphegina keeniana* Will. Orillia, Ont., May-June. Abundant on flowers of *Osmorrhiza claytoni*. (Curran).

Sphegina infuscata Loew. Lillooet, B.C., 1919, (A. Phair); Orillia, Ont., May 30, 1921, (Curran).

Sphegina lobata Loew. Orillia, Ont., May to July, 1921. (Curran).

Sphegina petiolata Coq. Orillia, Ont., May to July, 1921. (Curran).

Sphegina campanulata Robert. Joliette, Que., (J. Ouellet).

354. *Myiolepta bella* Will. British Columbia, April to July, (Treherne and Keen).

375. *Hammerschmidtia ferruginea* Fall. Orillia, Ont., May, 1921. (Curran).

Brachyopa diversa Johns. Orrilia, Ont., May, 1921, (Curran).

Brachyopa flavescens Shan. Orillia, Ont., May 5, 1921, (Curran).

Brachyopa media Will. Orillia, Ont., May 5, 1921. (Curran).

Brachyopa gigas Lovett. British Columbia, (Treherne).

* *Ceria ontariocusis* Curr. Orillia, Ont., May 30, 1921. (Curran). Can. Ent. Vol. LIII, No. 8, 1921.

381. *Volucella vesiculosa* Fabr. Toronto, Ont.

Sericomyia sexfasciata Loew. Orillia, Ont., May 29, 1921, (Curran). Cheticamp, B.C., June 30, 1917. (F. Johansen); Barker, N.B., June 24, 1914, (J. D. Tothill).

387. *Eristalis nemorum* L. Vernon, B.C., (M. Ruhmann); Banff, Alta., (N. B. Sanson).

387. *Eristalis obscurus* Loew. Orillia, Ont., May 5-20, 1921, (Curran).

385. *Eristalis compactus* Walk. Orillia, Ont., April-May, 1921. (Curran).

392. *Helophilus dychei* Will. McDiarmid, Ont., (N. K. Bigelow).

393. *Helophilus groelandicus* O. Fabr. Lillooet, B.C., (C. H. Young).

392. *Helophilus bilinearis* Will. Orillia, Ont., April-May, (Curran).

393. *Helophilus lunulatus* Meig. Orillia, Ont., April-June, (Curran).

Criorhina luna Lovett. Wellington, B.C., April 17, 1903, (R. N. Harvey); Ucluelet, B.C., (Young).

Criorhina aurea Lovett. Penticton, B.C., April 21, 1919. (E. R. Buckell).

401. *Pocota bomboides* Hunter. Victoria, B.C., May 6, 1919, (W. Downes).

402. *Cynorhina armillata* O. S. Orillia, Ont., May 18, 1921, (Curran).

403. *Milesia virginiensis* Drury. Point Pelee, Ont., (Bigelow).

405. *Sphecomyia vittata* Wied. Orillia, Ont., May 16, 18, 1921, (Curran).

401. *Brachypalpus frontosus* Loew. Ottawa, Ont., May 23, 1908, (J. Fletcher).

401. *Brachypalpus parvus* Will. Penticton, B.C., April 21, 1919, (Buckell); Duncan, B. C., (A. W. Hanham).

383. *Arctophila flagrans* O. S. Lake Louise, Alta., Aug. 15, 1915. (J. B. Wallis).

Tachinidæ

* *Ernestia nigropalpis* Toth. Stickeen River, Savary Island, B.C., (Townsend, Wicham, Sherman).

* *Ernestia johnsoni* Toth. Fry Creek, B.C.

* *Ernestia frontalis* Toth. Cranbrook, B.C., (Harrington and Garrett).

* *Ernestia platycarina* Toth. Savary Island and Bear Lake, B.C.

* *Ernestia sulcocarina* Toth. Cranbrook, B.C., Lillooet, B.C., (Garrett and Bird); Husavick, Man., (Wallis).

* *Ernestia bicarina* Toth. Bear Lake, B.C.

The above six species described in Can. Ent. Vol. LIII, Nos. 11 and 12, 1921.

476. *Metopia lateralis* Macq. Quebec. (J. Ouellet).

Dexiidæ

504. *Ptilodexia harposa* Walk. Joliette, Que., July 13, 1920. (J. Ouellet).

Anthomyiidæ

538. *Fennia corvina* Verr. Mt. Royal, Que., Joliette, Que., May, June, 1920. (Ouellet).

543. *Mydaea occidentalis* Mal. Mt. Royal, Que., May 31, 1920, (Ouellet).

Hydrotaea militaris Macq. Mt. Royal and Lauzon, Que., May-June, 1920, (Ouellet).

552. *Hylemyia johnsoni* Stein. Outremont, Que., May 28, 1920, (Ouellet).

553. *Hylemyia trivittata* Stein. Joliette, Lauzon and St. Remi, Que., June-July, (Ouellet).

553. *Hylemyia testacea* Stein. Mt. Royal, Que., June 20, 1920, (Ouellet).

553. *Prosalpia silvestris* Fall. Mt. Royal, Que., May 28, 1920, (Ouellet).
558. *Pegomyia lipsia* Walk. Outremont, Joliette, and St. Louis, Que., June-August, (Ouellet).
558. *Pegomyia vittigera* Zett. Mt. Royal, Que., May 28, 1920, (Ouellet).
559. *Hoplogaster nigritarsis* Stein. Joliette, Que., July 13, 1920, (Ouellet)
560. *Coenosia compressa* Stein. Joliette, Que., July 10, 1920, (Ouellet).
560. *Coenosia flavicosa* Stein. Mt. Royal, St. Louis, Que., June-August. (Ouellet).

Scatophagidæ

566. *Chactosa punctipes* Macq. Joliette, Que., July 15, 1920, (Ouellet).

Sapromyzidæ

* *Palloptera albertensis* John. Calgary, Alta., (Owen Bryant). Psyche, Vol. XXVIII, p. 22, 1921.

Oscinidæ

Elachiptera costata Loew. Outremont, St Louis, Que., May-July, (Ouellet).

Geomyzidæ

645. *Anthomyza tenuis* Loew. Joliette, Que., July 13, 1920, (Ouellet).

Hemiptera.

Arranged according to a Check List of the Hemiptera excepting the Aphididæ, Aleurodidæ and Coccidæ of America, North of Mexico by E. P. Van Duzee.

Aradidæ

Aradus parshleyi Van D. Vernon, B.C., April 28, 1915, (M. Ruhmann).

* *Aradus implanus* Parsh. Trenton, Ont., June 18, 1907, (J. D. Evans); Montreal, Que., May 15, 1906, (J. I. Beaulne).

* *Aradus medioximus* Parsh. Vancouver Island, B.C., May 21, 1897, (G. W. Taylor).

* *Aradus uniannulatus* Parsh. Edmonton, Alta., April 17, 1919, (F. S. Carr).

* *Aradus cinnamonus* sub. sp. *antennalis* Parsh. Kelowna, B.C., 1917, (Treherne); Vernon, B.C., April 12, (Ruhmann).

The above four species described in Trans. Am. Ent. Soc. No. 1, Vol. XLVII, 1921.

Lygæidæ

461. *Ortholomus longiceps* Stal. Aweme, Man., Aug. 21, 1920, (Criddle).
Kolenetrus plenus Dist. Ottawa, Ont., July 20, 1912, (J. I. Beaulne).
588. *Stignocoris rusticus* Fall. Hemmingford, Que., Aug. 30, 1916, (C. E. Petch).

Membracidæ

1611. *Carynota stupida* Walk. Onah, Man., July, 1920, (P. N. Vroom).
1633. *Telamona westcotti* Godg. Aweme, Man., June 26 and July 15, 1920, (Criddle).

Cicadellidæ

2181. *Eutettix strobi* Fitch. Aweme, Man., Aug. 13, 1921, (Criddle).
2251. *Thamnotettix kennicotti* Uhl. Aweme, Man., Aug. 13-22, 1920, (Criddle).

Aphididæ

Schizineura ulmo Linn. Chilliwack and Agassiz, B.C., on elm and currant, (R. Glendenning).

Orthoptera.

Mantidæ

Litaneuria minor Scudd. Osoyoos, B.C., Aug. 23, 1920, (Eric Hearle).

Oedipodinæ

Aulocara elliotti Thom. Lethbridge, Alta., July, 1920, (Strickland and Seamans).

Trimerotropis brunneri McNeill. Lethbridge, Alta., July 29, 1912, (J. B. Wallis).

Acrididæ

Melanoplus flabellifer Scudd. Lethbridge, Alta., July 7, 1921, (Strickland).

ODONATA.

Arranged according to Muttkowski's Catalogue of the Odonata of North America.

Dr. E. M. Walker has supplied the following list of Species which he considers of sufficient interest to be reported upon.

Coenagrionidæ

Lestes disjunctus Selys. Revelstoke, B.C., July 19, 1921, (E. M. Walker).

Lestes uncatus Kby. Revelstoke, B.C., July 17, 1921, (Walker).

Enallagma hageni Walsh. Caron, Sask., June 26, 1921, (Walker).

Enallagma ebrium Hag. Verden, Man., June 23, 1921; Herbert, Sask., June 28, (Walker).

Enallagma civile Hag. Lepelletiar, Man., June 18, 1921, (Walker).

Enallagma carunculatum Morse. **Nebrom, B.C., July 22, 1921, (Walker).**

Ischnura cervula Selys. Revelestoke, B.C., July 19 ,1921; Nelson, B.C., July 21, (Walker and Whitehead).

Æshnidæ

Ophiogomphus severus montanus Selys. Nelson, B.C., July 19, 1921; Nelson, B.C., July 21, (Walker and Whitehead).

Ophiogomphus rupinsulensis Walk. Griswold and Virden, Man., June, (Walker).

Æshna sitchensis Hag. Field, B.C., Aug. 5th, 1921, (Walker).

Æshna interrupta Walk. Nelson, B.C., July 22, 1921, (Walker).

Æshna umbrosa occidentalis Walk. Kootenay Lake near Nelson, B.C., July 22, 1921, (Walker).

Libellulidæ

Cordulia shurteffi Scud. Revelstoke, B.C., July (Walker); Nelson, B.C., (Walker and Whitehead).

Somatochlora albicincta Burm. Vancouver, B.C., 4500 feet, July 30, (Walker).

Somatochlora hudsonica Hag. Banff, Alta., July 13, 1921, (Walker).

Sympetrum madidum Hag. East of Portage la Prairie, Man., June. Manitoba record. (Walker). Piapot, Sask., June 29, (Walker).

Leucorrhinia hudsonica Selys. 10 miles west of Portage la Prairie, Man., June, 1921. Field and Vancouver, B.C., (Walker).

EPHEMERIDÆ

* *Bætis intercalaris* McD. Ottawa, Ont., June 11-14, 1920, (McDunnough).

* *Bætis flavistriga* McD. Ottawa, Ont., June 14, 1920, (McDunnough). These species described in Can. Ent. Vol. LIII; No. 5, 1921.

COLLEMBOLA

* *Friesea sublimis* MacNam. Arnprior, Ont., April and October (C. MacNamara). Can. Ent. Vol. LIII; No. 6, 1921.

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Ontario Department of Agriculture

FORTY-SECOND ANNUAL REPORT

OF THE

Beekeepers' Association

OF THE

PROVINCE OF ONTARIO

1921

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
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1922

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To His Honour HENRY COCKSHUTT, ESQUIRE,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Forty-second Annual Report of the Ontario Beekeepers' Association for 1921.

MANNING W. DOHERTY,

Minister of Agriculture.

Department of Agriculture,

Toronto, 1922.

OFFICERS FOR 1922

President—E. T. Bainard, Lambeth, Ont.
1st Vice-President—John Myers, Stratford, Ont.
2nd Vice-President—A. McTavish, Carleton Place, Ont.
Secretary-Treasurer—F. Eric Millen, Ontario Agricultural College, Guelph.

Directors.

1. John McKinnon, St. Eugene.
2. A. McTavish, Carleton Place.
3. M. B. Holmes, Athens.
4. John McLean, Consecon.
5. Hector Inch, Port Hope.
6. H. G. Sibbald, Toronto.
7. F. W. Krouse, Guelph.
8. Jas. Armstrong, Simcoe.
9. R. E. Adamson, Mount Elgin.
10. John Myers, Stratford.
11. E. T. Bainard, Lambeth.
12. Mrs. W. A. Closs, Powassan.
13. F. Eric Millen, Provincial Apiarist, Ontario Agricultural College, Guelph.

Committees.

Honey Crop Committee—E. T. Bainard, Wm. Couse, Wm. J. Craig, H. G. Sibbald, *Secy.* F. Eric Millen.

Press Committee—Wm. A. Weir, A. Brown.

Committee on Co-operation—H. G. Sibbald, J. L. Byers, R. F. Holtermann, F. W. Krouse, Wm. A. Weir, W. A. Chrysler, *Secy.*, F. Eric. Millen.

Representatives to Fair Boards.

Toronto Exhibition—Wm. Couse.
London Exhibition—E. T. Bainard.
Ottawa Exhibition—A McTavish.
Royal Winter Fair—Wm. Couse and H. G. Sibbald.

FINANCIAL STATEMENT

Receipts.

Balance on hand, 1920	$ 38 87
Membership fees ($1.50)	684 00
Membership fees (75c.)	381 75
Queen order receipts	1,725 24
Affiliated Society fees	90 00
Ontario Government grant and honey exhibit grant	1,150 00
Honey sold, Fruit, Flower and Honey Show	221 45
Subscriptions to United States journals	39 10
Honey sold at C. N. Exhibition	1,383 03
Sundries	40 29
	$5,753 73

Expenditures.

Fees to County societies	$ 196 00
Grants to County societies	270 90
Committee and Convention expenses	387 01
Subscriptions to *Beekeeper*	476 14
Printing and postage	186 98
Queen payments	1,428 07
Office help	60 00
Refunds on queen orders	145 69
Honey bought for Fruit, Flower and Honey Show	379 64
Expenses Fruit, Flower and Honey exhibit	72 25
Subscriptions to United States journals	39 49
Honey bought and expenses at C. N. Exhibition	1,383 03
Sundries	47 99
Balance on hand	680 54
	$5,753 73

W. W. Webster,
President.

F. Eric Millen,
Secretary-Treasurer.

Note:—Twelve County Societies have not paid their affiliation fee of $5.00.

ONTARIO BEEKEEPERS' ASSOCIATION

The Forty-first Annual Convention was held in the Arlington Hotel, Toronto, on Tuesday, Wednesday and Thursday, November 22, 23, and 24, 1921.

The Convention opened on Tuesday at 10 a.m. by singing the National Anthem.

PRESIDENT'S ADDRESS.

W. W. Webster, Little Britain.

In welcoming this large and representative gathering on this the forty-second anniversary of the Ontario Beekeepers' Association, I cannot but think how like we are in some respects to the inmates of the modern hive with whom we work, and whose habits we study. For as we remove a comb from this hive, or "bee city" as it is sometimes called, we see her royal highness the queen in the centre of a circle of bees, facing her from every angle. They evidently appear to be her executive directors or advisors, apparently engaged in thought. Just beyond them are her soldiers, executioners, sentries, food gatherers, bread makers, undertakers, chemists, and a host of others. Can we doubt their powers of communication, or that they, too, in their own way convene, and that their consultations and conventions are to them just as important as ours? Or may it not be that in their meeting they are voicing their appreciation of the Department of Agriculture for kindness shown in their behalf?

Many of us are here to-day who for years have regularly journeyed to these annual meetings. We have learned much by discussion and personal conversation not to be obtained by the reading of books and bee literature. Then, too, we enjoy the social intercourse. It gladdens the heart, rejuvenates a man and seems to make living worth while, and with Eugene Secor we would say:

"Then let us, then let us, be glad while we may,
For brief is the time, the time of our stay.
We'll bury all envy and banish all strife,
With greetings right royal to-day."

Then again Eugene Secor, who was a prominent bee-keeper as well as a poet, tells us:

"Tis friendship, sweet friendship,
'tis friendship that binds.
As brothers we meet here to-day.
We're kindred by labour. Our hearts
and our minds
Shall echo the greetings we say."

But, returning to the bees, their thoughts and ideas, and whether or not this supposition be true, that bees really know when the Government grants money on their behalf. Be that as it may, the executive and directors of our Association appreciate the efforts of the Department in the granting of money for the extermination of foul brood, and for a suitable building for the study of apiculture. Ever since the last annual gathering in the new apiculture building at Guelph we have felt that we were commencing a new era in the history of bee-

keeping. Yet while much has been done, and is being done, there is still a great deal to be accomplished. For instance in European and American foul broods, those two diseases which take the joy out of bee-keeping—while we are not by nature pessimistic, yet we fear they are not on the whole diminishing; in fact we very much fear they are on the increase.

In order to make the best possible use of money allowed for this purpose, and to do away with much travelling expense for the present year, it has been thought best to appoint local men in the various counties as inspectors for their own counties. It this way much more can be accomplished with the money available.

In treating European foul brood many queens are necessary, and many more than can be obtained. It may be that some day our Provincial Government may see fit to assist us in the rearing of good disease-resistant queens in sufficient numbers to meet all demands.

With honey prices seeking pre-war levels and with only an average crop throughout the Province of forty-six pounds per colony of light honey and twenty-four pounds per colony of dark, we are not boasting of any great wealth accumulated this year. We are not as prosperous as during the war, but we do not want the war brought back to increase our prosperity.

We were proud of this Association's exhibit at the Canadian National Exhibition. Who could blame us if we possessed a feeling of pride within our bosom as we beheld the display of honey; and best of all, the sales were sufficient to more than meet the expenses. It was also the intention to put up an exhibit equally as good at the Royal Agricultural Winter Fair, had the building and heating arrangements been completed, but which was necessarily postponed for another year.

We are informed the College Queen Rearing Apiary has commenced the rearing of queens, but will not start commercially until the coming spring, when they hope to have a man devote his whole time and attention to the work.

During the past year 1,364 queens were sold, as compared with 1,298 last season.

Co-operative buying is proving satisfactory in the purchase of queens, and we would suggest that it might work equally as well in purchasing supplies and cans, as also in the selling of honey.

I have enjoyed a special privilege in being identified with the Association at a time when it was most prosperous and honey sold the highest in its history. May I bespeak for the incoming executive the warm interest and earnest assistance of the members generally and the well wishes of the Association.

R. E. L. Harkness, Second Vice-President, expressed his pleasure at being present, as the Conventions were a great enjoyment to him, and their value could not be estimated, on account of the practical ideas imparted and also the social intercourse. He spoke of the amount of honey from basswood, in which he thought there was a great falling off throughout Ontario. He thought the basswood crop very important, as it follows the clover crop, and if the basswood can be lengthened out it would help the white clover flow. Besides, the basswood trees are very beautiful, and they were important from a reforesting point of view, as the Ontario forests have been recklessly destroyed and there has been very little effort to renew them. He thought that one of the greatest works the Association could take up was to start at reforesting at once. He said that on his farm there was a wood lot of about twelve acres, and in 1905 a large amount of

timber had been taken out of it on account of its maturity, and this year his honey crop had been got from that wood lot; without it he would have had practically no honey, yet those trees were only fifteen years old.

W. A. CHRYSLER said that twenty-five years age he had been interested in planting basswood shade trees along the road, as they added to the appearance of farm property and to homes.

H. E. EYRE said there were two kinds of basswood, one blooming a couple of weeks earlier than the other.

R. F. HOLTERMANN said that the basswood tree's natural place was in a forest where its roots could remain moist. They did not do well when planted along the roadside, as they got dry and did not yield much honey.

F. W. KROUSE said there was quite a difference between the basswood and the trees bought at nurseries, which are called linden, but which are not our natural wild basswood. He would not advise anybody to plant linden trees, which are not a forest tree, but a shade tree. He had never seen his bees working on the linden trees except one season.

The Secretary-Treasurer read his reports, which were adopted on motion of Mr. Holmes, seconded by Mr. Krouse.

REPORT OF THE SECRETARY-TREASURER FOR 1921.

F. ERIC MILLEN, O.A.C., GUELPH.

The total number of memberships in the Ontario Beekeepers' Association received during the year ending November 30th, 1921, was 1,033, a decrease of 155 memberships from 1920.

Thirty-two County Associations are now affiliated with the Provincial Association and in good standing. Two counties organized and affiliated during the year, Southern Ontario and Glengarry; Dundas County reorganized. Two counties that were in good standing last year disorganized this year because of the long distance between beekeepers, and lack of interest—Frontenac and Renfrew.

There are still a number of counties not yet affiliated, as seen below.

Following is the list of Counties with membership to November 30th, 1921. Those marked with a star have no County organization:

Counties	Members	Counties	Members
*Algoma	2	Kent	12
Brant	16	Lambton	19
Bruce	34	*Lanark	7
Carleton	56	Leeds and Grenville	25
Dufferin	25	*Lennox	2
Dundas	35	Lincoln and Welland	36
Durham	9	Middlesex	36
*Elgin	7	*Muskoka	7
Essex	13	*Parry Sound, Nipissing and Temiskaming	10
*Frontenac	7	Powassan	18
Glengarry	18	Norfolk	17
Grey	33	*Northumberland	9
Haldimand	24	Southern Ontario	5
*Haliburton	1	*Ontario	15
Halton and Peel	43	Oxford	21
*Hastings	11	Perth	18
Huron	31		

*Peterboro	12	Stormont	20
*Prescott	6	Victoria	24
Prince Edward	21	Waterloo	28
*Rainy River	1	Wellington	42
*Renfrew	6	Wentworth	25
Russell	14	York	32
Simcoe	49	Toronto	104
		*Outside Ontario	42

The Association filled 198 orders for 1,364 queens. In 1920, 196 members purchased 1,298 queens.

With the inspection work devolving upon the County Associations much more than has been the case before, an increase in membership should follow.

Another factor which has had an injurious effect upon membership during the past year has been the uncertainty of the issue of the bee journal. Now that the journal is issued every two months with some certainty that the members will receive the journal on time, this trouble should disappear.

In some counties the secretary and other officers do not call the members together sufficiently often, and the beekeepers consequently lose interest. The County Association should hold at least one meeting in the winter and arrange for one or more apiary demonstrations during the summer.

President Webster appointed as Resolution Committee, Messrs. M. B. Holmes, John Myers and H. E. Eyre.

Mr. Barfoot, Toronto, asked where basswood trees could be obtained.

Mr. Holtermann said the basswood tree in Canada produced a great deal of seed, and many young shoots would spring up around any of these trees, and they could be easily got in any neighborhood.

S. Jackson asked about planting evergreens for windbreaks.

Mr. Harkness had found the Norway spruce excellent, being fast-growing and high, particularly for orchards. Another desirable tree was the Austrian pine, which is very hardy. For a lower, shorter windbreak our native cedar is very well adapted.

Mr. Bainard asked if anyone could give information about the chestnut as a honey producer.

Mr. Holtermann said the sweet chestnut bloomed about the same time as basswood; the honey was darkish, and it was a very free yielder. The horse chestnut was not of very great advantage.

Mr. Floyd, Winnipeg, said that as he went out on the prairie he became acquainted with a new plant for windbreaks, the Russian pea tree. It grows about seven feet high, and is also a great honey producer. It is loaded with a yellow blossom early in the season, right down to the ground. While not an evergreen, it grows very thick, and catches the snow, and at the same time acts as a good windbreak. It produces honey bloom about a year after planting.

Mr. Harkness advised planting the Russian pea tree as an ornamental tree, but he never saw a honey bee on one.

Miss Hahn, Myrtle, thought something definite should be done about tree-planting, and said she had helped to put in several hundred.

On motion of Mr. Krouse, seconded by Mr. Armstrong, the President was requested to appoint a committee to investigate the matter and find out where the trees could be obtained.

IMPORTANCE AND METHODS OF QUEEN BREEDING.

JAY SMITH, VINCENNES, INDIANA.

Great improvements have been made in the honey bee in certain respects. For instance, the golden has been made yellow by selection. Again, by selection, bees have been bred for gentleness and a marked improvement has been made in the temper of the bee. Many claim that by selection they have been able to materially increase the honey-getting quality of their particular strain. This last point has been disputed by many careful observers who, after trying out several strains, could see no difference in the honey-getting ability of these strains. However they admit that it can and should be done. If it is possible by selection to breed bees with more yellow and of better temper, why not also increase the honey-getting qualities by the same method—selection? The importance of this cannot be over-estimated. Let us suppose that by careful selection we were able to increase the honey getting ability of our bees ten per cent. Think what that would mean. As there would be very little expense in producing this ten per cent extra, the profits would in many cases be doubled. By careful selection in breeding from the colony that produced the greatest yield, some have believed that the gathering ability of their strain of bees was greatly improved. However, when others tried this strain along with their own, no difference in this respect could be noticed. In such cases we attribute the greater yields of honey to the improved methods and better knowledge of beekeeping. In other words, the *man* and not the *bees* had been improved.

The difficult problem in improvement is the fact that mating cannot be controlled as in the case of animals and fowls. An even greater obstacle is the difficulty of knowing whether it was the gathering quality of the bees or the *condition* of the colony that brought the big yield. Many times the colony made a big yield due to the fact that it was extra strong just at the beginning of the harvest. The reason for its being strong was the fact that it went into winter quarters with an abundance of honey, plenty of young bees and a young, prolific queen. A very ordinary colony of black bees in the condition described will make a bigger yield than the best strain of Italians, if the Italian colony is lacking in any of these conditions. There may be plenty of stores and bees, but the queen may be old and cannot build the colony up to the required strength before the honey flow. Or there may be a fine young queen, but the colony is deplete in stores. In this case the queen would retrench on egg lying till the flow came on and then would build up, but too late for the best results at gathering. Again there may be a good young queen, plenty of stores but not enough bees. In this case the bees might come through the winter, but would be so weak in bees that they could not build up until too late. In these cases the failure might be laid to the strain of bees, when in reality it was the condition of the colony. However, let us not be too pessimistic about improving the honey-getting qualities of our bees, for no doubt it can be done if one can take the time and work necessary to accomplish this.

In the first place we must see that the condition of all colonies to be tested is the same. They must have queens reared the same time and as nearly alike as possible. They must have the same number of bees as nearly as this can be arranged. They must have a large brood nest and an abundance of stores. Forty pounds should be the minimum. An ordinary ten-frame hive will weigh thirty-

five pounds with frames, combs, bees, etc. This would make the colony complete weigh seventy-five pounds as it was ready to go into winter quarters. The common ten-frame hive is not large enough to accommodate the colony when it gets to rearing brood in the spring, so another hive body with combs must be added at that time. If the bees are wintered in a two-storey hive it should weigh not less than ninety pounds in the fall. One hundred pounds is still better. This will insure plenty of stores for winter and spring, and still leave plenty of room for brood and pollen. We must remember that we cannot pick out the best queen unless we give her a chance. Many good queens are condemned for the reason that they never had a chance. They are not given room enough; so they fill the brood nest and swarm just at the beginning of the harvest. So they are condemned as bad swarmers. I know of a case where a certain strain of bees were condemned for being poor winterers. They had produced more surplus than any of the others, but they died out in the winter. These were very prolific queens and they were given eight-frame hives. They kept the hive bodies well filled with brood and put most of the honey into the supers which was extracted. The bees starved to death in the winter and were condemned as poor winterers. In the spring the colonies should have the same amount of brood, and if all are the same in brood and bees, and one colony made considerably more honey than the others, it would seem like a good safe bet to use that queen for a breeder.

One of the best indications that a queen will make good is her size. I know some have said that the best queen they ever had was a small queen or one of medium size. However, a queen cannot be an extra good one unless she has the size. To contain enough eggs in the process of formation to be able to lay 4,000 eggs per day, requires size. I have found that as a rule the larger the queen the better, for she is more prolific, and we must have prolific queens if we would have strong colonies that give us a good surplus. By continually selecting the largest queens, why cannot we increase the size of our queens? The American Jersey cow is much larger than the Island Jersey; due to the fact that we have selected larger animals as breeders. No doubt we can do the same with queens.

In the matter of breeding, the drone plays as important part as the queen; therefore it is important to see that all drones are well bred and uniform in color, to be sure there is no black blood in them. Some recommend giving a few of your best colonies a lot of drone comb so they will rear large numbers of choice drones. This is very unsatisfactory, from the fact that they will not rear a large number of drones for any length of time. The most practical plan is to requeen your whole yard in order that there will be no inferior drones. My experience leads me to believe that queens do not go as far to mate as is generally supposed. If you have plenty of drones of good stock, and no blacks or hybrids in your yard, and no other bees closer than half a mile, I believe you will have very little mismating. Of course it will depend upon how many colonies you have, and how many there are half a mile away. But if you have about equal numbers, I believe that it would be very rare that one of your queens would mate to the drones half a mile away.

But some will ask, "If this is continued, how about inbreeding?" My advice on this subject is to forget inbreeding. As the drone that fertilizes the queen dies, this will prevent inbreeding. It is a common fad to lay any defect in animals, fowls and bees to inbreeding. If we always select the best, we will improve the stock whether inbred or not. The Holstein breeders are careful not to

inbreed, and they attribute much of their success to that fact: while the Jersey breeders prefer in many cases to keep the same stock continually breeding from the best; and they have equal success. If one continually selected for color or gentleness and paid no attention to the size of queens or the amount of honey the bees gathered, there is every reason to believe that they might deteriorate as honey gatherers; but it would not be from the inbreeding, it would be due to selecting for color rather than honey.

For a time the long-tongue bee was talked of, but now little is said about it. Dr. Merrill has been conducting some experiments which lead him to believe that the bee with the largest honey sac is the best gatherer, as it carries the largest load. Mr. Demuth has found that some bees make more trips per day than others. These are interesting lines of experiment, and maybe something useful and practical will be worked out.

However, for the practical honey producer, I believe better results will be obtained if he studies the condition of the colony and sees to it that they have young queens, plenty of stores, a sufficient number of bees and a large brood nest, than he will by attempting to breed a strain of bees that are superior honey getters.

Prof. Coleman, of the University of California, tells of an interesting experiment concerning the crossing of bees. Pure Italian queens were crossed with pure Carniolan drones. The offspring of this cross were, in colour, the same as the queen. This applied to both drones and workers. Then pure Carniolan queens were crossed with Italian drones, when both drones and workers took the colour of the Carniolan. It has, therefore, been stated that it was not possible to tell whether the bees were hybrids, as far as colour is concerned. While agreeing that this might be true in crossing distinct races where the colour had been fixed by hundreds and thousands of years of breeding; yet as applied to Italians crossing with Blacks or hybrids, this rule does not hold good. It has been shown time and again that in case a yellow Italian crosses with a Black or a darker Italian, the worker bees will invariably be darker in colour and vary considerably in their markings. So in summing up, I would say that I believe the practical honey producer can get better results by seeing to it that the colony is in the right condition for honey getting than he can by attempting to breed up a strain of bees that will produce more honey. As there has been a nice little sum of money appropriated to carry on the work of queen rearing at Guelph, we may look for some interesting as well as profitable experiments to be carried on by Prof. Eric Millen, who has charge of that line of work.

R. Fretz said that the more he got into the breeding business, the more he found he knew nothing about it. It was a great speculative subject. He thought the only way to find things out definitely was by our Government Department carrying on breeding in isolated places. His first question was, "Which is the more important factor in breeding and the greater in improving stock, the selection of the drones or the selection of the mothers?" He would frankly say he did not know much about it. Mr. Smith had mentioned about securing a purity of breed and of colour, but it was a question with him whether colour determined the purity of the stock. His next question was, "Do the principles of breeding

that apply to animals apply to insects, or will the principles of breeding as applied to fowl apply to insects?" The question of Mendelism came in there, and he thought it ought to be determined.

Mr. McKinnon said he could not add much, except to say something about introducing queens, as he had worked this out for himself, and he believed it was the best thing he had found. He thought he had tried every method he had seen in print, but the best method in his hands was direct introduction, that is, in the ordinary manipulation of the bees, or in yard work, on his ten-day visits, to bring a number of bees with him and re-queen anything he found queenless. He just cut out the queen cells and introduced the queen on the comb, among the bees. He did not know that he could tell any special way of doing that, except that the action of the bees must be studied, and that was really all there was to it. He thought the reason many beekeepers did not like that method was because they had never tried it. A year ago he had lost only one queen during the whole season by that method. He had 600 colonies in all, and probably requeened two-thirds of them. When manipulating a colony, enough smoke must be used to quiet the bees. The first thing the bees do is to gorge themselves with honey, and thus they are in a condition to accept the queen, which is introduced on a comb outside the hive, and when the queen and comb is put back in the hive the bees quiet down, and the queen is accepted.

A Delegate: "When do you take the other queen away?"

Mr. McKinnon: "Nine days previous. Of course it doesn't make so much difference, provided the colony knows that they are queenless. I have taken a queen in a queen cage, removed the Black queen, and introduced the queen in the same operation, and had success at this season."

A Delegate: "You would have to find a queen in a hurry; if you were too long in finding a queen they would not be in a position to accept your other queen."

Mr. McKinnon: "There is also this about it. These bees may not be willing to accept the queen at once. They may attack her; but there is no reason for giving up. Just with your finger move the attacking bee away and allow them to get acquainted. I find it is mostly the queen's fault. The queen sometimes appears to be frightened; and starts running over the combs, but just as soon as she quiets down and appears with them on the comb, and the bees are allowed to get acquainted—which they don't take long to do—they form a body-guard around this queen the same as they would around their former queen, and once they do that, that queen is accepted. In most of our cases, when we want a queen introduced in that way, I just put the queen alone in the queen cage, and if their actions indicate that they don't want to accept the queen I re-fill this cage with workers from this colony that don't want to accept the queen, workers about two days old; you can easily pick them out by their nice shiny appearance. Be sure to run a match through the candy so that it will take little time to release the queen."

Mr. Caldwell said that late in the season he had used Mr. McKinnon's method successfully in two cases, and both of the queens were accepted. He had also recommended the plan to a neighbour, who had done the same thing, and reported that he did not lose any.

Mr. Holtermann said that a number of years ago he got some queens from Frank Benton, who claimed, as others did, that the temperament of a bee comes

from the female parent and the physique from the male. He bought Cyprian bees, mated with Carniolan drones, and those bees were very gentle, so that the theory proved correct, and it would be well to bear it in mind.

Mr. Myers suggested whether a great deal of selection was not made for colour. Beekeepers often took him to colonies that had the best colour, but he thought it was a great mistake to look for colour more than for gentleness or honey gathering. He had made progress in breeding on Dr. Miller's plan of breeding from the best colonies, not always those that were best in colour, although he liked to keep up the colour when possible, but colour should give way to other points of more value.

C. B. Gooderham said that in his experience Mendel's law applied to insects as well as to animals, in breeding, especially in colour. He asked Mr. Smith whether yellow was a dominant character over black and over grey in the Carniolan.

Jay Smith replied that he did not know. He had never claimed that one colour was more dominant than the other. It was a question of breeding, back of it—how long they had been breeding for that colour, and how firm the colour was fixed. The same Mendelian law of colour holds good with insects and animals, according to Mendel's experiments.

Mr. Gooderham: "What would be the progeny of a Black queen and a pure Italian drone? Would they all show yellow? I think there is an account in the A.B.C. of some experiment in the United States, showing that the dominant colour was of the Carniolan queen. Would the yellow be a dominant colour in the cross I suggested?"

Jay Smith said that that question had been argued on both sides. It had been argued that they would take the colour entirely off the mother on the first cross, and after the first cross it would be mixed up a certain per cent., so that he did not know how it would be. He did not believe one breed would fix the colour unless there was long breeding back of it.

Mr. McKinnon said that when he commenced breeding, in the first cross he was trying to breed pure Italian bees, and would have bees of every colour, from the half-band of yellow to the true Italian, and some more yellow than the true Italian in the first place. He also got some blacks. Of course there would be a difference in the colour of the bees resulting from this cross. Another question was the different qualities of the bees. He felt free to talk about this, because he did not advertise queens for sale any more, and he would say there was a great difference in the quality of bees. When he first started he bought queens from all over the country, from almost every prominent queen breeder in the United States, and also imported queens from Italy, and there was a vast difference in the working qualities of the worker. The years 1912 and 1913 were the two poorest seasons; in fact they had nothing at all, and at that time he had six or seven different strains of bees that he had got from queen breeders. One strain in particular put up about seventy-five pounds of surplus honey, while the rest required to be fed almost during the whole season, in order to keep them alive. He could pick out that strain of bees no matter where they were, that made the surplus honey, showing that there is a big difference in bees.

Mr. Holtermann told of ordering a hundred queens from four well-known and different queen breeders in the United States. One of them said if the colonies headed with seventy of his queens did not give as much honey as a hun-

dred from anyone else's, he offered to give the queens for nothing. Another one had been stating that his bees gather two pounds to another man's one pound. All those queens were introduced, all of them being marked, and the next season the speaker could not find one bit of difference between those various queens.

SHORT CUTS IN THE APIARY.

H. G. Sibbald, Inglewood.

The speaker said he wanted to introduce something that would stir the delegates to tell about their short cuts, and thus he would learn, first, about equipment; short cuts meant standard or uniform equipment—frames the same, hives the same, stands the same, packing cases the same, in all the yards; half a dozen different sizes of frames would involve bungling and trouble, and the beekeeper would lack comb foundation for one side and have plenty for another. Then, as to honey extractors, a power extractor, and a large one taking eight combs at least, gives much more speed. Then the honey pump, it takes much time to take off every pail or sixty-pound can, drain it out, lift it up, and put on the strainer cloth, and it would be a short cut to get a honey pump. A large tank instead of a small one would be a short cut. Anything that hinders work is a long way round. A capping melter would be a short cut. Another saving would be to guess out your probable demand and put the honey direct into the containers in which you want to sell it. It is a short cut to have plenty of cans on hand when the season comes, and be able to put the honey into the cans without having it candy or granulate. A good smoker is a short cut, and a poor smoker is a long cut. In the matter of winter cases, we use four-colony cases, and these are packed in the fall and unpacked in the spring. Perhaps the four in a case is more economical in first cost, and it is preferable in the summer time to have the hives single walled, but others will argue otherwise. Steam or heated honey knives are no doubt an advantage, especially with beginners. Another large question with big beekeepers is whether to have a central extracting plant, or a honey house in each yard. In the speaker's section of country he would rather have a honey plant in each yard. In the manipulation of bees he managed with less work than before, and was not so fussy, as he understood more about their behaviour, by experience. Some work can be cut out; for instance, hunting through a colony to see if they have a queen. Now, when the quilt is removed in the spring a queenless colony gives what he would call a queenless hum. Also, it is easy to see if they have honey, and to see the brood among the combs, or to tell that they have a queen by the contentedness of the clusters. Those are the things that are important in the spring, and the examination can be made of 200 colonies in two hours. They are better without handling, and it is not necessary to spend much time. In the spring, if they have stores and a good queen and are comfortably packed, they don't need much else. It is a short cut to leave them alone and not fuss with them. The next manipulation is clipping the queens. It is easier to find queens before the colony gets too strong; therefore it is a short cut to clip the queens in the early part of fruit bloom. He unpacked before they got too populous, and then went to the supering, which is really a short cut if done early; if not, some will get queen cells started and begin to swarm, giving

great trouble all through the season. It is a good plan to leave the excluder off for a week or ten days until the bees get well up into the super. It is a real short cut to have abundance of supers. Some time must be spent on colonies that are not working well, as it may be found that they are queenless or have a poor queen or there is something wrong. If the colonies are running with the supers three-quarters full, and one is found only a quarter full, it is a sign that something needs attention. That plan cuts out the need of going into every colony every week or ten days; the behaviour of the bees shows how they are getting along. The speaker wished he could find a short way of requeening. He thought the easiest plan was to find the old queen and have some cells matured and ready, and twenty-four hours after insert the queen cell with the cell protector, and let the queen hatch out in the hive, and mate from that hive. By that plan in nine cases out of ten he believed the queen would be mated all right. It might be found that they had not accepted the queen or she had not hatched. Then there would be a chance to re-queen as Mr. McKinnon suggested—destroy the cells and introduce another queen—because as a rule nuclei were kept for a few extra queens in case of emergency. The speaker did not suppose he was up-to-date in the matter of feeding bees. He used feeders something like box-feeders that hold about fifteen pounds of syrup; put the empty or shell super on to hold the feeder, then poured the syrup in, with some grass to make a float, and let the bees take it down. By this plan an immense quantity of syrup can be fed in a day. Feeding being quite a job, he would like to hear of a short cut in that.

A DELEGATE: "I use a thirty-pound pail."

J. L. BYERS said he had not made much to boast about in the line of equipment, and some of his short cuts might be considered matters of neglect. He thought that one of Mr. Sibbald's best points were regarding spring management. He believed that spring work should be done in the fall. The colony should be fed sufficient that they would certainly be all right till the following May. He gave each colony a hasty examination in early spring, by just removing enough of the packing to get at the back of the frames, turning the quilt back, and if no honey was seen at the back of the frames it was certain there was none in the hive, because the bees used the honey from the front of the hive first. He preferred cool days for this work, because the bees are clustered and the stores could be seen better. In regard to feeding, he had written a great deal about the superiority of the ten-pound pail, but he had changed his views. In the last two years they had fed one large apiary in one day—over a ton of sugar—with a bottom feeder. They heat the water in a couple of agricultural furnaces, and, when the syrup is prepared at the central plant, they fill it up in barrels and load it on a truck and go to an apiary. The job is done in a hurry, and it beats anything for rapid feeding that he has known. Feeding a ton a day was a short-cut. The feeder was under the hive. The bottom of the winter case was also the bottom of the hive, and they simply lifted the hive up to put the feeder on. The feeder is simply a plain box, and a handful or two of excelsior is thrown in syrup to keep bees from drowning.

Q.—"Don't you drown bees that way?"

MR. BYERS: "Less than by any other plan."

Q.—"What would be the entrance?"

MR. BYERS: "The regular entrance there would be three-quarter inch, and six inches wide."

Q.—"You would require a strong man to lift the hives."

Mr. Byers: "They are very easy to handle; we only have to lift up the hives about six inches."

Q.—"Why not have big boxes on top?"

Mr. Byers: "They won't take it nearly as fast. I don't like the top box feeder. It is all right for warm weather, but would not do for cold weather."

Wm. Couse thought the ten-pound pail was better in cool weather. Anything that the bees cannot get readily when it is cold they will not work at so well. Leaving the feeding till late was a long-cut, not a short-cut; it should be done in September, when you are getting a good fall flow. Beekeepers do not learn to leave bees alone until they are twenty years in the business; they want to play with them, work at them, and putter with them. The short-cuts were a development of the business, the number of colonies now running up into hundreds. In fact he had heard of a western man who had 12,000 colonies stretched over 100 miles, and he would need a lot of short-cuts.

Mr. Harkness thought that the later the feeding was done the farther ahead financially the beekeeper would be. For instance, if a colony needed twenty pounds of feed in September, fifteen pounds given the last week of October would be just as beneficial, and the colony would be just as heavy the middle of November as if a larger quantity were given earlier in the season. He fed the last of October, and entirely from the bottom feeder. He had tried overhead feeders, and he had about 200 that he would sell very cheaply.

Mr. Holtermann did not want to see the ten-pound feeder get a black-eye. He had some very fine bottom feeders that he had got years ago, and the objection he had was that there must be a loose bottom board on the hive, which made it impracticable to use them when bees were packed for winter. In the case of a limited number of colonies, the later the feeding was done the better, as there was less opportunity of excitement in the colony and less waste. He did his feeding after the bees were packed, and gave them enough feed to remove any anxiety. Every colony should be weighed before the bees are packed, and on each colony is marked the amount of feed to be given. The ten-pound feeders are put into cases, filling each on the trucks, and the whole yard can be fed in half an hour's time. The pails are inverted over the brood chamber, which is much better than those box-feeders that they have to climb, to get to the syrup. Enamel on the feeders keeps them from rusting, and there is very little danger of their leaking. The ordinary tin feeder has ordinarily so little tin on it that they will get rusty and leak, but those that are lacquered inside will last.

F. W. Krouse was glad to hear Mr. Holtermann defend the ten-pound feeder, as he had adopted the ten-pound pail feeder in place of a wood feeder, and found he could feed faster with it and get better satisfaction. Feeding can be done at all times, early or late. Those pails, when lacquered inside, will last indefinitely. His son and himself fed 3,000 pounds of syrup in one day, having to go to three different yards, two of which were two or three miles from home. That could not have been done with wood feeders.

Mr. Bainard said he had used those boxes, lining them on the inside with light felt roofing, which makes them waterproof, and the syrup did not taste of the roofing. There was absolutely no leak with the syrup tins.

Mr Lozier said the ten-pound or five-pound pails were all right to feed

heavy syrup in the fall, but were a flat failure with light syrup in the spring, as they leak all around the side of the lip.

Mr. Holtermann: "Why do you want to feed thick syrup in the spring?"

Mr. Lozier: "It stimulates them and they raise more brood."

Mr. Holtermann: "Unless the bees consume that syrup at once it goes sour. The syrup should not be fed thin; feed it half and half."

Mr McKinnon said there was a way to load pails into a truck. If a load of ten-pound pails were put on, some covers would fly off. He had boards made to fit the width of the truck, then put on a row of ten-pound pails, and then a board that fits in, and pack the board on to hold the pails down; this holds the syrup and enables the truck to travel as fast as wished.

COMMITTEE ON REFORESTING.

The President appointed, as Committee on Reforesting, Messrs. J. L. Byers, James Armstrong, R. E. L. Harkness.

PACKAGE BEES.

Hector Inch, Port Hope.

Bees in combless packages have been in big demand the past few years. This demand was created by the difficulty of purchasing bees in small colony lots and the desire to make rapid increase. Again, many packages were purchased to make up winter losses, and by beginners who, not knowing where to buy bees in colonies, saw an advertisement for packages, became interested and placed their order. In this way, instead of investing all cash, one is investing part in food and labour. Besides, one is more sure of starting without disease.

Are bees purchased in packages successful? This can be answered according to the care and treatment given, by shipper, received in transit, and more particularly the purchaser. The time of arrival and the season also play an important part.

Cages. There are several styles of cages now in use, made of wood and wire. The most common one is about fifteen inches long, seven inches high and five inches wide, made of wire screen sides, solid board ends, top and bottom. A similar cage used by some shippers has wire screen ends as well. When these cages, filled with bees, are shipped by parcel post the wire screen must be double, and three-eighths of an inch apart to comply with the postal laws. When shipped by express the single wire screen will be accepted.

Another style of wire cage is somewhat longer and higher. It is covered with corrugated paper, put on so as to give sufficient ventilation and yet keep the bees as dark as possible. In the shipments I have seen by this cage, all have had liquid food. Liquid food is not permissible, however, by parcel post, and they have to be sent by express.

There is another cage made of thin boards, and solid, all except for the saw kerfs in the bottom for ventilation. In a large shipment that arrived in Ontario from the south last spring, every package was dead, owing to insufficient

ventilation. As soon as a few bees died and fell to the bottom, they clogged the kerfs and caused death to the entire package.

A similar cage has saw kerfs in the sides for ventilation. For shipping by parcel post the kerfs must not exceed one-half of an inch to comply with the postal laws. Whatever style of cage is used, however, it has been claimed that it should have a capacity of about 360 cubic inches for each pound of bees.

Filling cages. In filling cages too much emphasis cannot be laid on necessity for young bees. Old bees cannot stand the confinement in transit. They will either die en route, or lose so much vitality that they will dwindle away before any brood emerges. This causes some of the brood to become chilled, and it will take the young colony much longer to build up, and then it will probably be of no use in gathering any surplus.

Stores en route. Abundance of candy for stores en route should be supplied. It is well to have more than enough. Some shipments have had barely enough stores to last until they reached their destination, and on arrival the bees were on the verge of starvation. Although all of them seemed alive, there were about one-fifth of them on the bottoms of the cages with wings extended and quivering. When fed, most survived, but after a few days in the hives, soon dwindled away owing to so much loss of vitality.

The queens that accompany packages should be securely fastened in their own cages, so that the bees cannot release them during transit. In an experiment with queens loose on arrival and in their own cages, it was found that after the bees were released in the hives seven to ten days, more queens were found missing, dead or drone-layers from the loose packages than from those where the queens were securely fastened in. It is also more convenient to have the queens in cages when placing the bees in the hives.

Again, it has been found during early spring and while the weather is cool that the queen cages are sometimes hung too low in the packages. When the bees cluster, the queen cages are below them, and the queen becomes chilled.

Weight of packages. The lightest cage containing two pounds of bees with their stores, weighs around four pounds. The heaviest parcel post weight from point to point in the United States is twenty-four pounds, and in Canada, eleven pounds. The heaviest weight permitted from the United States to Canada is four pounds, six ounces.

It is claimed by some breeders that it is much better to ship larger bundles than the single package. They like to make a bundle of four packages, mailing them together with two strips, top and bottom, and placing them three inches apart. This makes a bundle of four packages weighing sixteen pounds or more. This will be handled more carefully than the single package. These large bundles are not permissible by mail from the United States to Canada, although there have been instances where they have come through. When shipping by express, some breeders prefer to put four bundles or sixteen packages in a crate. These are placed so as to give plenty of ventilation. This crate weighs seventy pounds or more and will be handled more carefully.

Time of arrival. The time of arrival should be according to the size of the package and whether a crop of honey is expected, or increase only. A medium supply of bees received early, with proper care, will make a fair-sized colony at the beginning of the honey flow. On the other hand, large packages of young bees can be used if received about the beginning of the principal honey crop. If

one wants increase only, a smaller package about the main flow will build up to a good colony by fall. At that time packages can be procured more cheaply.

Before the packages arrive, the hives should be made ready. If expected while the weather is likely to be cool, as at the end of April, it is well to have the hives packed as for winter to conserve the heat, so that the bees can carry on comb building and raise the maximum amount of brood. The hives should contain two frames of drawn comb and one of honey. If combs of honey are not available, three drawn combs are good. If drawn combs are limited, it is well to have one drawn comb with two sheets of foundation. In the absence of drawn comb, all foundation will do.

Releasing the bees. The bees should be released as quickly as possible on arrival. If they arrive prematurely they can be put in a dark cellar. First, feed them syrup made of a mixture of equal parts sugar and water. Paint the warm syrup on the side of the cage, first removing the outside screen if there is a double screen. Feed as much as they will take because in this condition they will handle more readily. Then sprinkle or paint the syrup on the comb or foundation that will be nearest the cage, even if there is honey in one comb.

Place the package in the vacant portion of the hive, pry off the cover where the queen cage is hanging. Place the queen cage between the first two frames next to the package and close the hive, making sure that you have a piece of queen-excluding metal tacked over the entrance. This should be about three-eighth inches deep and one and one-quarter inches long. If the package is put in the hive during the day, it is well to tack a piece of wire screen over the entrance, and over the queen excluder, thus confining the bees in the hives. The first bees which leave the cage, finding that they have not yet their freedom, raise a disturbance, as a rule causing all the bees to leave the cage. They will soon quieten down, however, cluster around the queen cage and begin releasing her.

Towards dusk or as soon as it is too late for the bees to have a full flight, remove the wire screen only. Some of the bees will come out, fly gently around the front of the hive marking their entrances and location. The next day they will have their full flight without drifting, as is too often the case, when shaken into the hives or otherwise not confined until they have settled down.

The next day, as a rule, the cages will be free of bees, and can be removed, a tight division board being inserted. If no nectar is coming in, a pint of syrup or more should be given daily until honey is coming in fast enough for their needs. A Boardman or Alexander feeder, a gem or small pail with perforated cover inverted over a hole in the honey board over the cluster may be used.

As soon as the queens begin laying, which is usually about a week or ten days after being placed in the hives, the queen excluders can be removed from the entrance, and frames added as fast as necessary. If one has capped brood to spare, it is quite a help to these colonies if they receive a frame. About this time one will notice that a queen is missing here and there. It has been claimed by many purchasers that one can count on losing from five to ten per cent. of the queens. The queenless bees may either be united to the nearest colony or another queen introduced.

We made a test with a shipment received from the south, which was a little more than fifty-five hours en route. A few packages were placed in a warm room for eighty-nine hours more, making a total of six days confined. At the end of

the period, there were few dead bees, but when released they dwindled somewhat, and did not build up as quickly as those that were released on arrival or confined a little over two days.

Another experiment tried was the comparison of the yields from packages received May 10th, on full sheets of foundation only, and on drawn combs and old colonies. As the bees were not confined until they quietened down, there was so much drifting that comparisons could not be made. From a yard started entirely from packages, and nothing but full sheets of foundation for brood chambers and supers, the total surplus was a trifle more than one-half of the total that was received from another yard containing old colonies where supers consisted of drawn combs.

In conclusion I may say: (1) While package bees may be received in late April or first of May with good success, the weather is likely to be too cold for the bees to build up. There is great danger that the queens will arrive dead, or that the cold will affect them so that they can only lay drone eggs. In other words, exposure to cold seems to destroy the power of the queen to lay fertile eggs.

The loss and damage of queens in these early shipments was laid to the fact that the queen cages were hung too low. When the bees clustered the cages hung below the cluster and were exposed.

(2) Owing to variations each season, there can be no set time of arrival of package bees. It is experience that for the average season, the bees should be nicely on the combs, just as the fruit bloom is opening up to be of most value for the honey crop.

(3) Nothing less than a two pound package should be secured.

(4) Package bees should be shipped by the most rapid route and released as quickly as possible on arrival, because bees lose vitality fast when caged.

(5) The shipper should send young bees and screen them through a queen excluder to keep out the drones. He should supply abundance of stores, and fasten the queens securely in their cages.

(6) The cages for packages should not be used the second time unless thoroughly gone over and renailed. In one shipment where second-hand cages were used, some of the candy boxes fell to the bottom of the cages, causing death to the bees by starving. Some of the cages came apart sufficiently to allow a few bees to escape. These hung on the outside of the cage, and at a transfer point the trainman would not accept them or take them any further. The postmaster then bought a large packing box, placed those packages in it and tacked over it a large piece of wire screen. Then he forwarded it by express.

F. W. Krouse warned against the mistake of releasing bees in the middle of the day. In his first year's experience he put packages out at night, set them in the hive, and the next morning the bees would come out just as if they were a colony, and not rush out as they do on hot days. The first year they came in three-pound packages, but the second year those cages were returned, and the packer was asked to ship two pounds of bees in the three-pound packages, and they came through in excellent condition, whereas a previous batch had smothered in the warm weather, and he thought the cause was putting them in cages too

small. Up to this time the package bees had given a surplus which had paid for everything but the labour, and this year the bees came through in excellent condition. Up to this year the queens were released in the cage; this year the queen was caged so that she couldn't get out.

Q.—"Why do they cage those queens?"

Mr. Krouse: "Lately that is thought the proper way to fetch them over; it is claimed the queen is in better condition when they arrive here." In the speaker's case it proved the other way.

Mr. Holtermann thought it was done in the interests of the shipper: that they make up those packages, and would not like to have the queen released, they not being introduced before shipping.

Mr. Dunn thought he knew why some of the package bees came in good condition and some did not. In 1919, out of seventy that came through, twenty-five per cent. of the queens were either weak or dead. This year, in a shipment of ten, nearly all were as lively as possible. The queens released themselves. He thought the queens were not raised by the shippers, but had a journey of 500 or 600 miles before being shipped to Canada.

Mr. Showell told of receiving some package bees, the queen being caged. The queens were released, and some disappeared after a few days, after he thought they were all right. Another shipment was sent without queens. The queens arrived by mail the next day, and they did much better with hardly any loss.

A. Brown said that his first shipment of 100 packages came in poor condition, but they were released, as well as the queen, on arrival. That was one of the biggest mistakes in handling package bees. Practically one-half of those queens were superseded. Profiting by experience, last year they left the queens in the cage surrounded by the swarm for a day or two and then released them, and only two or three were superseded. He thought queens should not be released for at least two days after the bees were in the hives. Regarding swarming out, he believed the proper time to release packages was in the evening, but if the release was required during the day a queen excluder slipped beneath the hive would prevent the queen from getting out, and thus avoid the loss.

Joseph Sharp, though perhaps amongst the first to receive packages of bees, thought that increase could be made to more advantage by manipulating the hives than by importing bees, because it takes too long for them to come, and most of them are dead in the cage on arrival. He had received eight packages last spring, half of which were dead when they came. It took two or three years to get value for your money that was sent south, as the southern shippers do not fill their orders like business men. They neither ship at certain dates as advertised nor return the money as promised.

A Member told of one southern shipper who had kept money for two years. He thought something should be done to expose such advertisers who deceived the Ontario beekeepers.

Mr. Holmes reminded those who were complaining of failure of shippers to fulfill contracts that the Association last year passed a resolution that negotiations should be conducted through its secretary for purchase of bees, on the same plan as members can procure queens from the south. He thought there was no other way of getting satisfaction.

Mr. Sharp suggested that every beekeeper strike against giving orders for packages for one year.

Mr. Byers reminded the Convention of the guarantee given by the Root Company to protect all purchasers against fraudulent advertisers in their journal.

Jay Smith said he had shipped package bees for five years, but had reformed and gone out of business. (Laughter). He had discovered that he was selling the goose that laid the golden egg, and he decided to go on strike. Those southern shippers were losing money, but did not know it, for they could not afford to send bees to Canada at the prices they got. It had been rightly said in the discussion, that the cages used for shipping were too small. Every two-pound cage should be about a foot square in medium warm weather; that would be about three times as large as the packages now used. Queens would go all around the world on solid food, and without water. Queens have to be reared in a different colony and introduced, and if an attempt is made to introduce them in a package on the road, the proposition is worse that it would be introducing them to a colony. Some people think all that has to be done is to drop in a queen; but he had sent a lot to Winnipeg, and the report came that the queens had got there and they were in fine shape; but eight out of ten of them were dead; they had killed those eight queens. He thought the reason so many were poor and did not do well was that they were raised in the early part of the season, were not properly reared, and were not good queens. The larvae did not get enough food. He had found that when he sent tested queens, and shook them in with their bees they always arrived in good shape, and invariably gave satisfaction, but some were injured, some were crippled, and they turned out poor. There was so much trouble with them that last year he adopted a new scheme, but found it too expensive; he introduced the queen to the colony, and then, afterwards, shook her in with her own bees. He introduced her by pushing the cage in, and afterwards introduced her to the colony, but that was too expensive. The ordinary way of the shipper is to stick her in there and send it on, and if the queen is lost it is not his fault. As to dishonesty and crookedness of shippers, he thought the bee journals should take the matter up and shut off their advertising.

Mr. Holtermann said he would sooner buy black bees than Italians, for when the latter feel crowded they begin to worry and sting one another, while the black bee has not that habit.

Mr. McKinnon said he had found the chief reason why queens were superseded was because the package contained the small virgin queens. Those package bees were mostly brushed out of the supers. Virgin queens will be thus brushed out, consequently the queen you try to introduce to that package is killed.

BEEKEEPING IN QUEBEC.

C. E. Petch, B.S.A., Entomological Laboratory, Hemmingford, Que.

There are 6,317 who keep bees, and operate some 64,417 colonies. Of this number only about 800 belong to one of the five Beekeepers' Associations. The names and memberships of these societies in 1920 were as follows:

1. The Beekeepers' Association of the Province of Quebec, composed of	180	members
2. The Quebec Beekeepers' Association, composed of	165	"
3. L'Islet Beekeepers' Association, composed of	225	"
4. The Lotbiniere Beekeepers' Association, composed of	60	"
5. The Portneuf Beekeepers' Association, composed of	40	"

The above societies are all affiliated to form "The Federation of Beekeepers of the Province of Quebec."

The colonies are distributed over a large area and in many counties, but the majority are located within a radius of fifty miles of Montreal. In the district of Beauharnois they are distributed as follows: Huntingdon Co., 1,820 colonies; Chateauguay Co., 4,144 colonies; Beauharnois Co., 2,251 colonies; making a total of 8,485 for that district.

Races of Bees.—There are only two races of domestic bees in the Province: the German, or Black bee, and the Italian. At the present time they hold about equal prominence; that is to say, one-third are German, one-third Italians, and one-third hybrids. There are a few apiarists keeping Golden Italians. As one travels down the St. Lawrence to the Gulf, the per cent. of Blacks increases but they are fast disappearing, and it will not be long before foul-brood will force the apiarists to adopt the Italian.

Size of Hives.—There are a great many styles of hives in use, but each year sees the box-hive diminishing until there are now only about 8,000 of them, or eleven per cent. of the total. The percentage varies with the locality, i.e., localities surrounding professional beekeepers have a very small percentage of box hives, but it increases as the distance from the large beekeepers increases. With regard to modern hives, the advice, as a general rule, is to use ten-framed hives for extracted honey, and eight or nine frames for the production of comb honey. However, if queens are replaced every two years with good laying queens then twelve-framed hives are recommended for extracted honey. Following this advice, the hives in use contain mostly nine frames, with the twelve-framed hive ranking second, but rapidly increasing, though some think it too heavy to handle when full, and the ten-framed hive ranks third.

Foul Brood.—Foul brood is present in about ten per cent. or 7,000 of the colonies, and increases as we proceed down the River to the Gulf, as does the Black bee. Of the diseased colonies seventy-five per cent. are infested with American foul brood. Counties of Nicolet, Drummond, St. Maurice and Champlain suffered most.

In addition to foul brood, dysentery is often prevalent where cellar wintering is practised, but rarely in colonies wintered out-doors. The principal enemies of the bee are the wax moths. This, of course, is due to the large number of Black bees, but, as in other provinces, where there are strong colonies of Italians the menace is largely removed.

Inspection Service.—The Inspection Service comprises twenty men possessing a wide knowledge of apiculture. Each is assigned a definite district, and I have found those with whom I have come in contact to be ever ready to assist even the smallest beekeeper. Part of their duty is to enforce the legislation with regard to beekeeping, the most important of which is as follows:

Revised Statutes of Quebec.

"Article 2038a.—It is forbidden to import into the Province any bees, or any accessory for beekeeping, which has already been made use of, unless the shipment be accompanied by a certificate from the head apiarist, or competent officer of the Province, or State, of origin, to the effect that such bees are free from disease, and that such accessory is not infected. The Minister may, however, authorize such importation, but for scientific purposes only.

"Article 2039.—Every proprietor or possessor of hives, bees and accessories, who knowingly sells, exchanges, or otherwise alienates, or transports from one property to another, any infected hives, bees or accessories, and every person who exposes to

the open air and infected frames, honeycombs, or objects whatsoever, or who conceals the existence of an contagious disease or diseases with which his bees may be infected, or who prevents the inspector from performing his duties, or who infringes any of the provisions of this section, shall, upon summary conviction thereof before a magistrate or justice of the peace, having jurisdiction in the place where the offence was committed, or by penal action before the Circuit Court having jurisdiction, be liable to a fine of not more than fifty dollars for the first offence, and of not more than seventy-five dollars for every subsequent offence, and, on failure to pay such fine and costs, to imprisonment for not more than forty days.

"Article 2036.—When a contagious disease has been discovered in an apiary, the Minister shall cause the necessary measures to be taken to subject the bees in such apiary to appropriate treatment, and, if necessary, he may order the bees affected, and hives occupied by them and all the accessories thereof, which cannot be effectually disinfected, to be destroyed in the presence of the Inspector."

In such cases the owner is indemnified as follows under—

"Article 2038.—1.—When the destruction of the hives, bees, or accessories, is deemed necessary by the Minister, he shall indemnify the proprietor or possessor thereof, or both, as the case may be, upon an equitable basis, which shall be left to his discretion."

But on the other hand, says—

"Article 2037.—If the proprietor or possessor of an apiary infected by a contagious disease, does not obey the orders which he receives for the treatment of sick bees, the Minister may order the destruction of the hives and of the bees and of all accessories thereof which cannot be effectually disinfected."

And in such cases, under—

"Article 2038. 2.—Nevertheless, in the case of Article 2037, the proprietor or possessor of the hives, bees and accessories, shall be entitled to no indemnity."

Further protection of bees is given by—

"Article 2041a.—Every person who sprays fruit trees by a sprinkler or otherwise, while such trees are in bloom, is forbidden to use or to permit to be used for such spraying, any mixture containing any compound of arsenic or any other poison hurtful to bees."

And for a penalty Article 2041b provides—

"Every person found guilty of an offence against Article 2041(a) shall, on summary conviction thereof before a justice of the peace, be liable to a fine of not less than one dollar and not more than five dollars, with or without costs, and, in default of payment thereof to imprisonment for not more than thirty days."

It is interesting to note that many bees were killed in the Macdonald College orchard this year after the trees had been dusted. It was not due to dusting when the trees were in bloom, but due to the bees visiting the dandelion flowers which were present in large numbers in the orchard. The orchard was divided into plots, for experiments with different dust mixtures, some sections being treated with a Bordeaux mixture to which arsenate of lead or arsenate of lime was added, and others with sulphur and the above poisons. The Bordeaux mixture must have acted as a deterrent, for the bees avoided the dandelions in those plots and confined their visits to the sulphur treated plots. This cost many of them their lives. The point to be observed is, that the same arsenicals were used with both fungicides, but the Bordeaux mixture probably acted as a deterrent while the sulphur did not. Since sulphur is better to use on our best varieties of apples, McIntosh and Fameuse, the obvious remedy is to mow the bloom before applying the dust.

Queen Rearing.—Queen rearing is engaged in by only a few. Statistics show only twelve, of whom three are situated in the district of Beauharnois. The Government purchased queens and gave $300 towards 1,172 queens.

Packages of Bees.—Packages of bees have been purchased to a limited extent, but the results have not been satisfactory, except in very few instances. Gen-

erally most of the bees were dead when the packages arrived. The above remark relates to importations from the United States.

Swarm Control.—Swarm control measures are practised by very few, other than professional apiarists. Mr. E. A. Fortion, Rougemont, Inspector for the district of Beauharnois, employs the Demarce system. Personally, I leave the colonies in single wintering cases the year round. At apple blossom time, from May 20th to June 1st, half the frames are removed and replaced by empty combs. A queen excluder is put on and then a super containing the combs from the lower chamber and empty combs. Nothing more is done except removing the queen cells and giving empty supers when needed, and putting them on the bottom. This simple system has given me entire satisfaction when producing honey to be extracted.

Publications.—The official journal of the beekeepers is called *L'Abeille*, and is published in French on the first of each month. The Department of Agriculture has issued Bulletin No. 62, "Le Rucher Quebecois," by C. Vaillancourt, Provincial Apiculturist, and Bulletin No. 68, "Use of Honey and Maple Sugar in Cooking," by Mrs. Blanche Lajoie-Vaillancourt. Bulletin No. 62, contains seventy-six pages of valuable information with numerous illustrations, and Bulletin No. 68 devotes twelve pages to the uses of honey.

Wintering.—Owing to our long cold winters, wintering is a very important problem with us. The mimimum temperatures are often very low and last for several consecutive days. For example, the following minimum temperatures have been recorded:

Hull, 1914, 30.2° F.; 1918, 30.8° F. Ste. Anne de la Pocatiere, 1914, 32.6° F.; 1920 31.6° F. Cap Rouge 1918, 34.7° F. Lennoxville, 1917, 40.0° F.; 1918, 45.0° F.; 1920, 47° F.

The common practice is to store the colonies in cellars, and the Provincial apiarist recommends a temperature of 42° to 43° F. The average loss in cellar wintering has been eight and a half per cent., but last winter went considerably above the average, being twelve and a half per cent. Mr. Selwyn, Kirk's Ferry, recommends a cellar set well down in the ground, so as to benefit as much as possible by soil temperature. It should have good natural soil drainage. The ventilating shaft of six-inch glazed tile should pass below the frost line for thirty to forty feet, and enter at the floor level. The out-going air should leave by a vent of the same size material placed in the ceiling of the cellar. An ideal situation is a hillside with a gravelly sub-soil and a good natural drainage. He has built two cellars at Kirk's Ferry along the lines indicated, and both have given excellent satisfaction. If a workshop is built above the cellar, insulating paper should be placed between the rough and dressed flooring, and the ceiling of the cellar lathed and plastered to provide a dead air space to keep out the cold from the building.

The average losses in out-door wintering are one and a quarter per cent. less than in cellar storage. This system is increasing in several places, and provided proper protection is given, the results should be very satisfactory. I have tried both systems, but prefer to winter outdoors. I have used the Krouse single colony case with planer shavings for packing, but I have found the lumber to be too light for my district unless the snow is very deep. Mr. Jones, Bedford, uses single cases, packed with leaves, and, I believe, with success. At Macdonald College they have used the Alpaugh quadruple case, but Mr. Tawse says it is not satisfactory. He says the lumber in the roof is too light, and due to the weight of snow, it sags and the roofing splits. This allows water to enter which, of course, is the worst condition

possible. Further, the bees cannot keep the entrances clean with only the four small holes as exits. He recommends boxes made of three-quarter inch matched lumber and lined with building paper. The boxes are collapsible and held together by hooks in the corners. The ridge of the roof should be tarred, and the whole covered with roofing paper. After placing the hives they should be covered as follows: two layers of burlap, two inches of planers' shavings, six sheets of newspapers, and eight inches of planers' shavings. If enamelled cloth takes the place of burlap the moisture condenses and causes the frames to become mouldy. Mr. Selwyn says: "Out-door wintering of colonies in packing cases is particularly suited to such districts as those adjoining the Great Lakes, and in the Maritime Provinces, where greater fluctuations of temperature are experienced throughout the winter months, and where it is often possible for the bees to get a flight as late as January and perhaps again in March, thus shortening the actual period of their confinement very considerably." However, in northern districts the bees rarely have an opportunity for flight for five months of the year, and may just as well be stored in underground repositories. Mr. Selwyn objects to out-door wintering, firstly because of the time and labour required to pack and unpack them; secondly, because of the fairly rapid deterioration of wintering cases; thirdly, because the range of temperature causes a noticeable increase in honey consumption.

However, successful wintering depends not only on protection but equally so upon an abundant supply of stores, and young vigorous queens. Each ten-framed hive should weigh at least sixty pounds, and to attain that weight it is often necessary to feed sugar syrup, but fall feeding is not practised to any large extent in Quebec.

Honey Plants.—In the western and central portions of the Province the main nectar producing plants are alsike clover, red clover, white clover, basswood and buckwheat. After passing Three Rivers going eastward, the area of buckwheat is rapidly reduced, and east of Quebec City white clover is largely depended upon for a crop. In the Eastern Townships and the district of Beauharnois the basswood has disappeared very rapidly in the past few years. The apple orchards are nearly all located in Huntingdon County; around St. Hilaire, Abbotsford and Rougemont, in Rouville County; around St. Joseph du Lac and La Trappe in Two Mountains County; around Chateauguay Basin in Chateauguay County. Weeds and wild flowers abound over wide areas. The most important from a beekeeper's standpoint are sweet clover, fireweed or willow herb, dandelion, goldenrod, wild tares, asters, field bindweed, ragweed, several species of Umbelliferae, chicory, thistles, clematis, milkweeds, several species of mustard, and heartsease. There are also large areas of raspberries, blackberries, blueberries, tobacco, maples, alders, elders, elm, sumac, willows, wild cherries, and plums.

Production.—The statistics for the 1919 crop were as follows: 5,631 apiaries containing 58,222 colonies yielded,

Extracted honey	1,737,073 lbs.
Comb honey	602,672 "
Wax honey	27,375 "

However, the average annual production is now 600,000 lbs. comb honey, and 2,500,000 lbs. extracted honey.

Our commercial markets outside of the cities of Montreal and Quebec are very few, but there is an enormous market in the immediate vicinity of probably every apiary. This market is generally neglected because of some advantages gained by

selling wholesale. The development of the market in the rural districts is the most important issue before our beekeepers to-day, and they could do nothing better than devote the greater portion of their energy to its enlargement. With this rural market developed there will be no danger of an over-production for many years to come. The following figures will be of interest:

Beekeepers increased 33% in past 5 years.
Colonies increased 30% in past 10 years.
Value of Colonies increased 250% in past 10 years.
Value of honey and wax increased 100% in past 11 years.
Crop of honey increased 150% in past 11 years.

In conclusion, I would say beekeeping is increasing and progressing very rapidly, and I believe in the near future Quebec will occupy the premier position as a producer of honey of the highest quality.

Mr. Holtermann said that his experience bore out Mr. Petch's paper in reference to the numerous sources of honey. He said that Quebec extracted honey was rarely as good in quality as that of Ontario, because the bees gather from so many plants—from cherry and dandelion and various sources. He doubted whether such honey mixed with clover honey was of as good quality as that of Ontario.

Mr. Petch replied that near the western end of Huntingdon county there was a plain running from Dundee to the village of St. Hyacinthe eastward, and practically to the city of Quebec, where there were practically no woods or wild flowers such as he had mentioned, to any extent, because all that land can be cultivated. At present there were no beekeepers to any extent in that wide area; and that extensive source of honey supply was not tapped at present, though that district furnished hundreds of acres of clover even now.

Mr. Holtermann asked as to the proportions of comb honey to extracted honey produced in Quebec.

Mr. Petch replied that in the past five years the production of comb honey in relation to extracted honey had been very much reduced, and there were very few comb honey producers at present near Montreal.

PREPARATION FOR AND WINTERING BEES IN CANADA.

C. B. Gooderham, B.S.A., Apiarist, C.E.F., Ottawa.

The wintering of bees in its final analysis consists of the conservation of their energy so that they may live longer than in the summer. In all parts of Canada where the winters are long and extremely cold this prolongation of life is absolutely necessary for the existence of the colony until brood rearing commences in the spring, and new honey is coming in. Individual adult bees can be compared to a dry cell having a given amount of energy, the more slowly this energy is expended the longer will be its life. To live long the bees must live slowly. Ideal wintering, therefore, would mean the reduction of the activity of the bees to its lowest point in order that young bees in the fall may be young in the spring and so be able to assume the active work of the colony when brood rearing commences.

In Canada many colonies of bees die each winter for the want of careful preparation, while many more are so weakened as to be of little or no value the following season. The remarkably high yields of honey in many places of Canada, and

the comparatively high prices of honey should be inducement enough to any person keeping bees to see that the bees are given the best possible conditions for wintering.

The long, cold winter in most parts of Canada is not so hard on bee life as may be imagined, in fact, wintering is easier in some respects than it is in milder climates, because the bees are confined to their hives for longer periods and rest more completely during the winter. This winter rest continues until some time in April; then the long warm days come quickly, the bees breed up fast, and the colony becomes strong in a very short time.

There are three things essential for the successful wintering of bees in Canada, the neglect of any one of them is to invite disaster. These factors are:—Strong colonies, that is to say colonies having as large a force of bees as possible, and consisting mainly of young bees. Colonies cannot be too strong for the winter. The second factor is an abundant supply of wholesome stores, and the third, protection from the cold.

Bees do not hibernate in the true sense of the word. When the weather becomes cold they form a compact cluster and the bees in the centre of the cluster generate heat by muscular activity which is derived from the consumption of stores. The bees on the outside of the cluster act as insulators to prevent the escape of heat from the cluster and are thereby warmed themselves. In a large cluster there may be many more bees engaged in heat production and still be a large force available to serve as insulators. A weak colony, on the other hand, have less reserves for insulation, and heat is lost rapidly as the exposed surface of a small cluster is proportionately much greater than that of a large cluster, therefore, the bees in the heart of the cluster have to generate heat more rapidly in order to keep the outside of the cluster at a proper temperature. It follows then that the stronger a colony is, the better are its chances of living through the winter.

As a result of the consumption of stores, waste matter collects in the intestine. Healthy bees eject this matter only during flight, but in many parts of Canada the bees are confined to their hives for periods of from four to almost six months during the winter without a chance of flight. It is important, then, to see that the bees are so protected that they will not need to consume very much food, also that the food is perfectly wholesome and containing as little indigestible matter as possible. If the cluster is small and the bees have been exposed to severe cold there will be a heavy consumption of stores, with a rapid accumulation of waste matter within the intestines. If the food is unwholesome this accumulation will be much more rapid and will finally bring about the condition known as dysentery; this will manifest itself in excessive production of heat, restlessness and the voiding of faeces within the hive. A colony in this condition usually dies before the spring, or is in such a weakened condition as to be useless for honey production the following season. Since bees wear and age in the winter just as surely, though more slowly than in the summer, it is necessary that the colony must be strong in order to survive until brood rearing is safely commenced in the spring and new honey is coming in. To accomplish this I would again draw your attention to the fact that it is important that the bees should be young, that they be given abundance of wholesome stores, and that they be protected from the severe cold.

Preparation for the Winter.—Preparation for the winter should be begun not later than the latter part of July in order to supply the first factor of successful wintering, namely, a strong colony consisting mainly of young bees. During the

middle or latter part of July all colonies should be requeened with young vigorous queens so that a maximum amount of brood may be produced during August and September. Not only will a colony containing a young queen raise more young bees for the winter than one containing an old queen, but the young queen will be more prolific and profitable the following spring. As it may not be convenient to requeen each colony every year, a vigorous, year-old queen will make a good colony for the winter provided it is strong in July. There is a danger, however, of the queen failing the following spring. Colonies that are weak in the fall should be united so that no colony should be covering less than about eight frames (Langstroth size) before the weather is cold enough for clustering.

Abundance of Wholesome Stores.—Clover honey is an excellent food for bees. In many parts of Canada where the honey stored comes altogether from Alsike and white clovers, the bees winter well in spite of a long confinement in a cellar. Buckwheat honey has also been found satisfactory where this plant secretes nectar. Sweet clover honey has also given satisfaction but is inclined to granulate more quickly in the combs than honey from alsike and white clovers. On the other hand honey gathered from dandelion and fruit bloom has been found decidedly unwholesome. Some of the honey gathered in late summer has also been found unsatisfactory, especially in parts of the Maritime Provinces. In some places, especially in parts in the north, the bees are sometimes unable to ripen and seal honey gathered from wild aster and other sources, owing to the cold weather. This honey is likely to ferment and in this condition quickly causes dysentery. Winter stores consisting largely of fruit juice gathered by the bees will quickly cause dysentery and death. Honey dew, an excretion of the plant lice, is also dangerous, however; as a rule very little of the latter is gathered in Canada.

The best substitute for unwholesome stores is a syrup made from two parts of best white granulated sugar to one part water, as sugar contains no indigestible matter, the cause of all trouble in connection with winter stores. This is made by dissolving the sugar in boiling water and allowing it to cool. This syrup should be given to the bees during the latter part of September or, in the more southern regions, the first part of October. This will give the bees time to seal over most of the syrup before cold weather sets in. The syrup should be fed as rapidly and with as little disturbance to the bees as possible. Miller feeders or ten-pound honey pails with many holes punched in the cover are suitable for this purpose.

In most places the honey left in the brood chamber after the supers are removed is from mixed sources, is not of the best quality and is also deficient in quantity. It is a good practice to give to each colony enough syrup to bring it up to the required weight, and in no case less than ten pounds. As the syrup is stored nearest to where the cluster is formed it is the first to be consumed, thus the accumulation of faeces is delayed.

The consumption of stores is usually very light during the coldest part of the winter, but is increased towards spring after brood rearing has commenced. It may also vary considerably between colonies. The most common cause of the death of colonies is starvation. The amount of stores given for the winter should be liberal; not less than forty pounds per colony. Although the actual amount of stores consumed during the winter may not exceed fifteen or twenty pounds, the surplus will usually be needed during the spring before new honey comes in. In addition to the stores left in the hive it is advisable to have a number of well filled combs of honey set aside to be given to the colonies in the spring.

Protection.—In all parts of Canada it is necessary to provide some protection for the bees during the winter months. There are two ways of doing this:—outside, in cases filled with packing material and in a cellar. Generally speaking the packing case is preferable in the milder parts of Canada such as the southern parts of Ontario, the Annapolis valley and British Columbia, and the cellar is more satisfactory in the north and on the prairies. In many places, however, both methods will give equally good results, the more important factor is deciding which plan to adopt. If the beekeeper has a good dry cellar which can be kept dark and well insulated against the outside changes in temperature, he should by all means use it as it will save the expense of building cases and the labour required to pack the bees. If, however, he has no cellar available, cases can be used and if the bees are packed away snugly and protected from the cold winds they will need no more attention during the winter, in fact not until the spring is well advanced when they will be found to be in a more advanced condition than bees wintered in the cellar and placed on their summer stands early without protection.

Wintering Outside.—In wintering outside it is absolutely necessary to protect the apiary from cold winds. Where this is not done by a natural windbreak, such as by trees or hedge, a fairly close board fence about eight feet high should be erected on all sides. Protection from wind is of the utmost importance.

The most economical case is one that will hold four colonies, as the combined heat of the colonies goes to keep up the required temperature it requires less lumber to build, and less packing per colony, as each colony is protected on two sides by adjoining colonies. Double or single cases may be used with equally good success but the initial cost is heavier.

The cases should be at least large enough to allow for four inches of packing beneath the colonies and on all four sides, and eight to ten inches on top, with an air space above or enough space above the hive to allow for a full depth super on top of the brood chamber in the spring. The lumber used should be grooved and tongued and from half to seven-eighths inches thick. The cover should be made to telescope over the sides and should be covered with some waterproof material. It is convenient to use a collapsible case as it can be packed away much more easily in the summer. The flight holes in the case should be cut opposite the hive entrances and as far apart as possible. The holes may be cut about six inches long and one inch deep for early fall and the spring. A revolving block should be made so as to close the entrance to one inch deep by three-eighths inches wide during the colder part of the winter. There should be no ledge beneath the winter entrance to lodge snow and ice.

For packing material dry forest leaves, planer shavings or chaff give excellent results. The bees should be placed in the cases in September, preferably before feeding is commenced, they can be packed on the bottom and all four sides and as soon as feeding is finished the top packing can be placed over them. These bees will not need any more attention until the following spring, when it is advisable to shovel the snow from the entrances during the latter end of March and to see that the entrances are not clogged with dead bees.

The bees should not be removed from the cases until the spring is well advanced as the extra protection afforded during the first few weeks of breeding is one of the main advantages of outside wintering. It is a good plan to leave them in their

cases until they are working well in the first super, this may not be until the latter end of May or early in June.

Cellar Wintering.—A good bee cellar is one that can be kept dark, dry, and fairly well ventilated and in which the temperature can be maintained between 45° and 50° F. A steady temperature and dryness are often difficult to obtain, therefore two important principles in cellar construction must be observed, namely the cellar should be so well insulated that it will be little affected by outside temperature and the ground should be well drained. In a cold region, however, and where only a few colonies are to be wintered, good results may be obtained by partitioning off a portion of the basement beneath the beekeeper's residence.

The best time to bring bees into the cellar is as soon as possible after the last good cleansing flight that may be expected, in many places this is early in November. After the bees are placed in the cellar they should not be disturbed in the least, as any disturbance causes excitement and this causes a heavier consumption of stores. The entrances of the hives should be left wide open but if there is any danger of mice getting into the hives it is advisable to place screening with a course mesh, large enough for the passage of bees but too small for mice to pass through, over the entrance. The best time to bring bees out in the spring is usually when the willows begin to bloom or show yellow, provided the weather is favorable. On the Coast, and other places where a considerable period of chilly weather may still be expected, it is advisable to leave them in a little longer. If, however, the bees are showing restlessness and indications of dysentery it may be advisable to remove them a little earlier. The bees should be removed from the cellar either during a dull day or late in the evening or early in the morning, as an immediate flight is not desirable since it often leads to confusion and robbing in the apiary.

Mr. Shield referred to the needs for fall management of bees—a good queen, plenty of laying room, and plenty of stores. Fall management should begin about the end of July or the first of August, during the flow of the white honey, and the movements of the queen should be watched. This was a good time to requeen if the queen was failing, and plenty of room should be provided for laying, as there could not be too many bees for the winter supply of energy. His experience was that it did not pay to winter weak colonies; they should be united. It would probably pay to unite several fairly strong nuclei, which could be used in the spring for strengthening weak colonies. These nuclei were best wintered in cellars. The average beekeeper feeds too little. Colonies should be fed enough to carry them through, so that they would not have to be fed again during the spring. They should be carried through until the season of willow or dandelion. The average colony should have fifty pounds of honey. Buckwheat or aster contain indigestible gums that plug up the intestines, and these should be avoided in order to get away from dysentery. He had found it paid to feed fifteen pounds of sugar syrup, made of two pounds of sugar to one of water. This helped considerably to safeguard against dysentery. He urged feeding as rapidly as possible, especially if late in the fall.

Mr. Holtermann: "When do you consider a colony too weak to winter?"

Mr. Shield replied that a colony was too weak when it was clustered in covering three frames. He would not winter it unless it was covering more than three frames on both sides, jumbo size.

Mr. Holtermann thought three frames a pretty weak colony to winter outside. Winter before last, by some mistake, he had one with just five combs, which

meant no bees on the outsides of the outer combs, and not many next to that, yet in that severe winter it came through with entire success. Referring to cases being made collapsible, his cases were made to take apart in the spring, but as this meant work he concluded it was unwise to take them to pieces, and simply took the hive out of the cases, leaving the packing in them

MR. CHRYSLER asked how small a colony could be wintered. He added that over a year ago, while preparing the colonies to winter, he came across one with a real good young queen, and decided to let them live as he had no other way of uniting with another colony. It occupied both sides of one comb, and there were no bees on the outside: practically one comb of bees was between two other combs. This spring it came out in good condition, filled the hive full, and gave probably 100 pounds of honey. He did not understand why Mr. Gooderham allowed such a large entrance for wintering; he had been practising closing the entrance except enough room for a bee to get out in case there was a fine day during winter.

MR. GOODERHAM said that the entrance he mentioned was an inch deep by only three-quarters for the winter; the larger entrance was for the fall and spring.

MR. ABBOTT asked Mr. Chrysler if he had any trouble in wintering bees with such a small entrance.

MR. CHRYSLER said that in one or two instances he had, but it seemed as though the colony was roused up in the fall and stayed roused up all winter before it was closed. In such a case there was need of cooling off, probably.

MR. ABBOTT thought if there was a little bit of extra snow in the small entrance there would not be much trouble.

MR. CHRYSLER said he thought he would test that matter out, and they had a foot or more of snow over the top of the hives, and he could walk over them without dinting the snow with his feet, it was so hard. There were two or three rows of hives that he was a little afraid of at one time, and he took down two or three to see if taking it away would make any difference, but the spring showed no difference in any of the hives from any he had in the yard. He thought a colony of bees could not be smothered under snow.

MR. HOLTERMANN asked whether Mr. Chrysler would dare to leave that entrance in the way he described it if he was away from his bees and a day came when those bees could have a cleansing flight.

MR. CHRYSLER replied that he had done it; he had mended his ways. The last time he saw his bees out in the yard was in December. He never saw them until April when they were gathering fruit blossoms. He had never cleaned out the entrance.

MR. HOLTERMANN remarked that last winter was no winter, to begin with. He added that he had never had the courage to leave that small entrance because he would not be sure at the time the temperature rose.

MR. CHRYSLER said that with a large entrance they all came out pell-mell, but with a small door they came gradually, and went in the same way. They might cluster at the outside of the entrance and get together there.

MR. HOLTERMANN said there were times when the season of sunshine was very short, and he had seen serious consequences from the bees not being able to get back rapidly.

MR. BRADER said he had tried the experiment of closing up the small portico in front with a handful of leaves instead of closing it down small, making the en-

trance about three inches square. It was a good wind-break, yet the bees could work through it.

MR. TILLSON said that one of the U.S. Bulletins recommended closing the entrance to an inch or less by a very small slat. He tried this one winter and lost a third of his bees. He thought climatic conditions had a great deal to do with the wintering problem, coupled, of course with the stores. That experience gave him a lesson and he changed back to the old system, and his losses decreased proportionately. He thought Mr. Chrysler's idea revolutionary, and believed he would lose 100% under such conditions, but he thought location had something to do with it. He had a friend who prepared young bees for wintering in small colonies; he has four frames not particularly well covered, and he seems to have remarkably good success. He puts in just the number of frames that he thinks the bees will cover, and one or two extra, and fills up the rest of the hive with wood wool which is finer than excelsior, and packs that down tight, then fills up with planer shavings on top of his case, and other packing. He uses a neat cover of wire meshing or the metal used in old days for metallic strainers, using that for the escaping moisture. The idea of wintering such small colonies came from something written by Mr. Holtermann in one of the bee journals.

MR. TODD said that he lived 600 feet above sea level, and there was a great deal of humidity in the air, and the weather was warmer than in Toronto. The matter was one of climate entirely. In the Niagara district he used a larger entrance, hardly ever less than three-eighth inch by four inches, and his quietest colonies were those which had the entrance a little larger. As to wintering small colonies, he thought if bees were young and had a young queen to help out in the spring, it would not pay to unite bees at any time.

MR. CHRYSLER explained that he used to have as large an entrance as possible because the type of his hives at that time were practically moisture proof, they were protected on the top, but no moisture could pass into that packing up above and go away. If upward ventilation is restricted the entrance should be wider in proportion, but both heat and draft were conserved by closing up as much as possible and allowing the moisture to pass up and out from the bees. During the winter probably from ten to twenty pounds of water must pass out of the colony and go somewhere. Coming down and out at the entrance is one way, and passing through the packing up above and out is the other way.

MR. ABBOTT: "What depth do you have below your bees?"

MR. CHRYSLER: "Three-quarters of an inch."

MR. KROUSE said he used a single winter case with a four-inch packing all around. When he first used that case he found it necessary to use the robbing block inside and close the entrance up to about two inches; then the entrance was four inches by three-quarters. He had not very good success in winter while he put the robbing block inside, and he concluded it was too warm: he would find the bees clustered in the portico, and even outside of the winter entrance. He had had good success since he took the robbing block out and had the entrance four- inches by three-eighths. The entrance to the hive proper was one-half inch.

MR. CHRYSLER: "You have a warmer hive than necessary."

MR. KROUSE said that while he had never united colonies, he thought a small colony of young bees and a young queen, if put in the centre of a box with a division board between, and filled up with various leaves or clean shavings, would have the whole box full and would be the best colony next year. He had

proved that time and again. When men advocated uniting colonies, he answered that in his experience his small colonies were the best.

Mr. Holmes thought, in view of experiences of men from both west and east, that such experiences in favour of the small colony should not be ignored. He added that in his section they had good success in wintering small colonies, a fact which was very encouraging, because if a small colony was going to be united with its neighbour there must be a sacrifice of perhaps a very good queen there, but to this sacrifice the ambitious beekeeper has a temperamental aversion to destroying a queen that is doing good work or that would give good service next year.

Mr. Holtermann thought that a colony could be too strong to winter well. He thought that having moisture pass out at the entrance to the hive was no way at all. He packed his bees so that the heat was conserved fairly well, and the moisture driven out through the packing, and passing off in that way. He had heard, time and again, of colonies, where the weather was severe continuously, where the whole entrance froze up, to the ruination of the colony, and if the moisture passed off at the top of the hive that condition would not exist.

Mr. House felt that the discussions were so important that he felt he might give his experience, which was the very contrary of what Mr. Chrysler and Mr. Holtermann were practising, as well as most of the people in Ontario. He considered an entrance two inches by three-eighths so small that he felt he would choke his bees to death. (Laughter.) He was wintering with a 16 inch entrance wide open, and he defied anyone to find ice at the entrance of any of the colonies. It did not exist, and there was no moisture and no ventilation. He did not care where the moisture or ventilation was taken away, but they could winter 97% in that condition over a period of nine, ten, or ninety years. Where was the difference? Some years ago Dr. Phillips, of the Government Apiary at Washington, doubted the story, and sent Prof. Rae to investigate, and he was shown 500 colonies near Peoria, with openings five-thirty-seconds of an inch by sixteen inches during the entire winter, and not one dead colony. The cover was single-inch honey board, two pieces, with paper in between the two; they had a telescope cover packed with various leaves packed very solid so that it was a cake over this house, so there was no possible way of heat or moisture—and where moisture can go, heat can also go and he wanted to conserve the heat. The trouble was that they had too small an entrance. He admitted that location had something to do with the matter, but he wanted them to try a one inch entrance at the bottom, screened so that the mice could not get in, and leave it wide open the length of the house, and take a chance on it. He had been doing that for twelve or fifteen years successfully with each apiary, and had never had a loss.

QUESTION DRAWER.

Mr. J. L Byers was appointed to answer the questions.

Q.—For outside wintering is it necessary to pack four inches underneath, or have any packing whatever?" A.—"Theoretically they can all prove that packing is necessary under the bottom board, but for practical purposes it makes no difference and can be dispensed with."

Q.—"Do you like wintering in two ten-frame supers instead of one in Southern Ontario?" A.—"I notice the super is recommended by some beekeepers,

especially in the United States. I wonder at such a proposition being made to people. I think it would be a nuisance. I cannot see any advantage of it. Instead of that large space that two hives would give you I would rather crowd the bees into one high body."

Q.—"How would you get the bees to take buckwheat honey out of the combs in late September or in October for winter stores?" A.—"I would much prefer feeding sugar syrup, and I think it will pay me handsomely nine years out of ten."

Q.—"What should be the price of an average colony of Italian bees for May delivery?" A.—"Will someone answer that?" (A Voice—"$15.") "Of course it will largely depend on the kind of a hive."

Q.—"Should there be packing under the hive in the case of the Krouse wintering case? If so, how would this be arranged?" A.—"You have already had my opinion."

Q.—"If bees are kept near a pond ten or twelve acres in size, would many bees be lost by dropping in the water?" A.—"The loss would be considerable. A friend who lives within half a mile of Sturgeon Lake, which his bees have to cross to go to buckwheat, loses very heavily sometimes, especially when flying against a head wind when heavily laden with honey."

Q.—"How should comb honey be sent through the mail?" A.—"I never had any experience. I received some, and it was all packed in excelsior. It is an expensive way, and is not a commercial success."

Q.—"How should we proceed to get rid of American foul brood when we find beekeepers near by who make no effort to control it, and leave exposed combs of colonies dead from American foul brood?" A.—"I will let this stand over as we have the question of foul brood later on the programme."

Q.—"What is the best way to strain honey?" A.—"There are about twenty different ways; I might say the most of our honey is not strained at all. I think cheese cloth is used more than anything else. In our Binbrook yard the honey runs from the extractor by gravity, to the next storey below, and there is a natural gas heater there, and that honey is heated right up, and everything rises so fast to the top of the large tanks. We try to leave it for forty-eight hours or more, and then draw it off into pails. This year I noticed that some of the five-pound pails had a few specks; on top of the honey."

Mr. Holtermann: "I think it is bees-wax."

Mr. Todd: "In honey there are millions of grains of pollen, and if the proper cloths are used and the honey is heated it will take all that out, and the honey will be of nicer, smoother quality."

Mr. Holtermann: "You mean to say that the pollen grains are strained out of the honey?"

Mr. Todd: "To quite an extent."

Mr. Holtermann: "I don't believe it."

Mr. Dunn: You may be right, but I always supposed it was that. Use bolting cloth and see what you get. Professor Harcourt, Professor of Chemistry at Guelph College, told me he found millions of grains of pollen floating in the

honey. He didn't say it could be strained or that it could not, so I cannot call Mr. Holtermann's bluff. The pollen might not be seen with the naked eye, but neither could Mr. Holtermann see his own brains, though I know he has them.

MR. BYERS: Generally speaking, if you leave your honey five or six days it answers fairly satisfactorily without straining; I think everything comes to the top.

BEEKEEPING IN THE NORTH WEST.

L. T. FLOYD, PROVINCIAL APIARIST, WINNIPEG, MAN.

It certainly affords me much pleasure to meet with you at this Convention and bring you greetings from the Manitoba Association.

Those of us who spend our time and the people's money in so called educational work in the other Provinces feel that we certainly owe a debt of gratitude to this association for the inspiration we have gained from this organization and its faithful workers.

Personally I owe much to Mr. Pettit and his aggressive work at the Agricultural College. When he first organized the co-operative experiment system I was fortunate enough to get in touch with him and he started me off on a line that has brought me a great deal of pleasure and work.

Ever since I purchased my first colony of bees the work has brought me very many surprises, and for the most part they have been pleasant ones, and I have experienced no greater surprises than those of the past season.

When I resigned my position as Provincial Apiarist in New Brunswick to accept a similar one in Manitoba I was warned by some of my friends that I was like the dog in the fable giving up the substance and grasping at the shadow, for surely there were no flowers of any account on the prairies, and if no flowers, could the bees secure a crop? The greatest surprise connected with the work in New Brunswick was experienced when I discovered that our two northern counties were the best for honey production. The honey was also of better quality and winter losses were much smaller than in the counties where the winter was mild and changeable.

I had read of the possibilities of beekeeping in the Western plains, and when I was offered the present position the prospect of severe wintering conditions offered an opportunity to follow further my study along these lines. Conditions for the advancement of beekeeping work in the west were never more favorable than they are to-day.

Thanks to eager, enthusiastic workers, we are well past the experimental stage, and it only remains to carry the gospel of better beekeeping into the many sections that are now undeveloped.

A report published in the *Beekeeper* last spring over the name of a Manitoba beekeeper, stating that 80% of the bees in the Province were dead, was far from the truth. The losses near Winnipeg were in some cases severe, as the stores were of poor quality because of a late flow of honey dew left with the bees, causing the death of many colonies, but this did not affect the Province as a whole, and the losses were very small except in the section mentioned.

I believe that beekeeping can be made profitable wherever the climate is suitable for the production of a good grade of wheat, for the simple reason that

where soil is fertile enough and the summer warm enough to grow wheat that same soil produces so many honey-producing plants that the crop is assured.

People used to eastern conditions can scarcely imagine the rapidity of plant growth under western summer conditions. The shortness of the season is counteracted by an increase in the length of the day, and the nights are almost as warm as the day. If we have sufficient moisture in June and July the crops grow very rapidly. The fertility of the soil is such that every seed finds a favourable place to grow and produce its kind, and we have great streches of country uncultivated or only partly cultivated that grow every year a tremendous crop of a great variety of plants, many of which are honey producers.

Eastern people are inclined to think that Manitoba is a vast plain on which few trees may be found; but there is really from a third to a half of the Province that is classed as bush or park country. This country is found along the rivers and in the country around and between the lakes, and is the richest land in the Province. Unlike the bush country of the east the trees are for the most part short and scrubby and do not shade and crowd out the smaller growing shrubs and plants, instead they help to hold the snow and give a certain amount of protection. In these stretches white clover, wild raspberry, saskatoon, golden rods, wild asters, hawthorn, red willow and many other honey producers find a very favourable place to grow. In these sections where wheat is not the only crop, we find that sow thistle, Canadian thistle and other importations have gained a foothold and threaten to force the small fields of grain out of business. The sow thistle is considered one of our best honey producers and is worked eagerly by the bees. Sweet clover is considered one of the best crops to grow to smother out sow thistle, so these sections are sure of a good pasture no matter which plant wins.

Sweet clover now grows in great profusion on the banks of the Red and Assiniboine Rivers. and its seed is carried by the high water in the spring until it finds a resting place far up on the upland, in this way it is increasing and will continue to increase. Basswood is found along the Red and Assiniboine Rivers as far as Portage la Prairie, and is considered a valuable honey producer in the Roseisle section. The snowberry or wolfberry is another valuable honey plant. It is a low-growing shrub found everywhere on the prairie, and in the bush all over the province. Cattle will not eat it as it has a hard stalk resembling the hard hack of the east. It bears its blossoms in clusters resembling mayflowers and yields honey for about six weeks, beginning in early July. These blossoms develop into white berries that give the plan its name. The honey flow in western Canada differs altogether from that of the eastern provinces because of the fact that clovers are not the principal honey producers and the other flowers yield a continuous flow until frost.

We get no great splashes of honey, as the largest increase noted was fifty-five pounds in one week from a colony on scales that gave a surplus of 550 pounds during the season. This season we had 125 days without frost and a honey crop averaging well over 100 pounds per hive. This season was not considered a good one for grain as the wet weather interfered seriously with the threshing and spoiled the grade.

It is interesting to note that the shortest season on record, 1916, when the province had only fifty-one days free from frost, and the grain crop was a failure, the beekeepers had a bumper crop of honey, which goes to show that frost and bad

weather does not affect the honey crop as much as the grain crop, and we may have our best honey crops on the years when grain is almost a failure.

In Manitoba we have two distinct systems of beekeeping, the American or system in which the Langstroth hive is the predominating feature, and the Central-European system carried on by the Poles, Ruthenian, Ukranian, Russian and German enthusiasts in which the Dzierzion hive is used.

Some of our best beekeepers are strongly of the opinion that when it comes to beekeeping we can all take off our hats to the New Canadian. As far as wintering is concerned he has a decided advantage. His hive is double walled with an inch and a half of fine chaff between the walls. This hive affords the much needed protection in the spring and fall, and his colonies build up rapidly and swarm early. This hive is also a good place in which to cellar winter bees. The entrance is placed half way up from the bottom and never becomes clogged with dead bees, but it is expensive to build and takes a lot of lumber—about forty-four square feet to the hive. When it comes to swarm control this hive cannot be compared to the Langstroth, as it has only twenty frames of Langstroth dimensions and it is necessary to extract before the honey is sealed to avoid crowding.

Beausejour and Whitemouth is the largest beekeeping centre in Manitoba. Around 2,000 colonies are reported in these sections, and if managed by the American system the locality would be heavily stocked, but because of excessive swarming these people are compelled to be satisfied with smaller average returns. Within twelve miles of Beausejour six different languages are spoken making it difficult to discuss modern methods. These people are well satisfied with their crops and their system, and do not take kindly to advice from any government official.

Strange stories come from these sections regarding the uses to which the honey is applied, but there is no discounting the fact that these people are bee lovers and in their own way they produce a lot of honey and claim the right to use it as they please. They prefer to use full sheets of foundation, and as a rule have a much larger percentage of worker comb in their hives than the average Anglo-Saxon beekeeper. They are not afraid of work, and in the rush season work day and night to keep up with their bees. They nearly all keep bees as a sideline, as they run a general farm scheme with dairying, poultry; and grain, though important, is not the only thing as on the farms further west.

Their bees are evidently all of one strain. I am informed that the original stock was Italian, purchased from G. G. Gunn of Lockport. These bees were sold to Ruthenians in Gonor and Tyndall, and have rapidly increased, until the entire country is stocked. The bees are leather colored and very gentle; some are so quiet that you can work with them without smoke. They have been kept in these sections for twenty years or more, as the Ruthenians have been in the Beausejour sections for about thirty-five years, opening up these sections from a boggy bush country over which it took a day to travel six miles, until to-day it is making a strong bid for first place as a mixed farming district.

Many of these people have automobiles and splendid farm homes. Their men have done much of the heavy work connected with railway construction in the west and street and building work in Winnipeg. Their women are the people

upon which the Winnipeg market gardener depends for practically all of his labor, and their *quaint* head-dress is a familiar sight on the streets of Winnipeg. Industrious and saving, peaceable and contented, we find much to admire in these people of different habits and customs from our own.

Their standard wholesale package is a seven hundred pound oak barrel, and in some of these apiaries I found as many as eight or ten of these, filled and granulated. They claim great virtue for the oak barrel in curing honey extracted before sealing. The heads are removed and the barrel filled, a board is set on the edge and a large piece of paper covers all. This allows for a free circulation of air underneath the papers. It means a lot of work to extract these crops with two or four frame hand extractors, and better organization with labor-saving machinery will go a long way to increase production.

Disease is one of the least of our problems. I have been visiting apiaries all summer, and have only found one apiary affected with American Foul Brood. An outbreak of E. F. B. was reported at Dauphin some years ago and the industry received a hard knock, not so much because of the disease as the fear of it.

Dauphin is a good section for beekeeping, but only a few bees are kept. Poor wintering, queenlessness and every other cause of poor success is charged up to disease. I inspected carefully every colony in the district and found no disease. We have here and there apiaries affected with sac-brood of a more virulent type than I have seen before. In fact some showed so much dead larvæ that I was in doubt as to whether it might not be a mild form of A. F. B., but upon consulting available literature I found that this was to be expected.

I might state that this disease seemed to be only in apiaries where the bees received little attention as I did not find any in the well kept apiaries. The beekeepers claim that only strong, vigorous stock can withstand the severe spring conditions, if the colonies are weakened by disease they soon drop out; and there may be something in this claim.

Wintering is no doubt our most serious problem, but we have men all over the province who have good bee cellars and claim that they never lose a colony except from starvation. We have men as far north as Dauphin who winter bees successfully packed outside, and claim that in the dry steady winter this is the best way of wintering. The style of case giving the greatest satisfaction is a single hive case, similar to the Krouse wintering case, allowing for eight inches of dry sawdust on the side, six inches underneath and a foot on top. Planer shavings, granulated cork and cut straw have been tried out by several beekeepers with disastrous results. The heaviest winter loosses have been caused by attempting to winter in outside buildings above the ground, and from making too much increase in the summer season; but Manitoba is not the only province that errs in this respect.

The three apiaries sending in the largest reports, viz: Trappist Monastery, St. Norbert, 19,028 pounds; Antoine Colle, Grand Pointe, 11,225 pounds; and St. Joseph's Orphonage, Otterbourne, 13,325 pounds, are the only apiaries wintering on sugar syrup, but they claim it to be entirely satisfactory and their crop reports prove that they know whereof they speak. Their averages running around 250 pounds per hive.

As far as markets are concerned I believe we have the best in America. Honey is featured in nearly every grocery store in the Province, and in many of them is carried in sufficient quantities to supply the demand for the entire year. This, I

think, is something that you do not find in many sections of the east. The bulk of this honey comes from the east, and we find eastern honey handled mostly in five and ten pound pails. Air Line Honey is also handled in glass and has practically a monopoly of the glassed honey business.

We can thank Ontario for building up this business, as a market cannot be developed without a product and the Ontario beekeepers have developed the market to the point where the western man has a chance to step in and claim it when he needs it. For the past month or two eastern honey has been selling as low as seventy cents for five pound pails, while the western men have made no sales lower than twenty-two cents wholesale, and the bulk has been sold at thirty cents retail. There is still about twenty-five per cent. of the crop in the hands of the beekeepers.

There is one great advantage in selling honey to western customers. They expect it to arrive in the granulated state, and prefer it in that way.

To sum up: We have perhaps 1,000 beekeepers in the province, of these 560 are listed with 7,593 colonies in the spring and 14,721 in fall, and an estimated crop of 903,000 lbs. of honey. This makes an average of around 100 pounds per hive. The honey is all of good quality, ranging from water white to amber but no darker. It is as a rule very heavy in body, and granulates as soon as extracted. We have little or no disease. Bees are kept successfully as far north as Norgate and Swan River. Many good locations are still unoccupied and the future seems to have much in store for those who go after it.

A DELEGATE: "Is the honey from the sow thistle called dandelion honey?"

MR. FLOYD: "No, it is a yellow honey, kind of amber; it is smooth, and granulates easier than other honey."

R. G. SMITH: "Can Saskatchewan and Alberta compare with Manitoba in honey production?"

MR. FLOYD: "A man from northern Saskatchewan says they have a greater variety of flowers there than in Manitoba. Where there is a certain amount of bush in the west there are many honey producing plants, but not so many on the plains, where the wind blows hard; yet Dr. Bedford reported that on the bald prairie he counted thirty different plants in blossom at one time. The fertility of the soil forces the growth of a great many plants."

MR. FLOYD: "The buffalo willow is a shrub growing four or five feet high, with a yellow blossom and a great perfume, but only blooms for about a week. The bees will work on it for three or four days, but it is a plant that helps in the spring. The Kara-gara or pea-vine is cultivated in many sections as a hedge plant and is considered quite valuable. Every single blossom is cut on the side of the plant by some insect, and the bees get at them through the holes."

MR. GOODERHAM: "The crops reported are not nearly as large in Saskatchewan and Alberta as in Manitoba, except in southern Alberta where they get large crops of alfalfa. The experimental farm at Lethbridge reports the largest crop of any farm in Canada, of white honey from alfalfa."

MR. FLOYD: "At Brandon fair last year a lady had 1,400 pounds of honey from eleven hives."

INCREASE—HOW AND WHEN TO MAKE.

E. T. Bainard, Lambeth, Ont.

A few years ago a man's success as a beekeeper would be judged by the number of swarms he had secured during the season, regardless of their size or the prospect of them building up for winter.

To-day some of the greatest achievements of the twentieth century beekeeper are to successfully control the swarming impulse of bees, to secure the greatest possible crop of honey, and to make the necessary increase when it will not interfere with the bees' honey-gathering activities.

Some of the requirements necessary before commencing to make increase would be:—Young laying queens, enough nurse bees to care for the brood, clean combs with some pollen, some nectar coming in, and a brood-rearing temperature within the hive produced by either more bees or by artificial means.

There are three distinct periods during the year when increase is usually made, through the clover flow, during the early part of the buckwheat flow and early in the spring.

When the clover flow is in full swing a limited amount of increase can be made by using the extra combs of brood procured in supers through the early part of the season, or the splitting up of any weak colonies. Personally I prefer using this extra material for queen rearing purposes and make the increase at the commencement of the buckwheat flow which is really the finish of the clover honey flow. To make the increase, divide up the strongest colonies, first find the queen, and leave her with the younger brood on the old stand, removing the oldest and best filled frames of brood, with as little honey as possible, to a new stand, and introduce a young, laying queen to them.

If in using the divisible brood-chamber Heddon Hive for this purpose, split them in two, taking the lower section which contains most of the brood and very little honey, to the new location.

If queen-rearing nuclei are used for increase, about all they require will be some combs of hatching brood and young bees taken from strong colonies.

When placing these new colonies in a new location, fill up the remainder of the empty hive with clean empty combs taken from an extracting super, a little pollen in them will be all the better, and always barricade the front of the hive so that the bees will mark their new location.

All these operations must be done before extracting operations have commenced, and if necessary, use a tent when opening all colonies, to prevent any possibility of robbing.

In some of our locations we have no fall flow, so we at once move our increase to a buckwheat location. The hives are large, but contain very little honey. They are screened on top and moved at night and if you do not need the screens they may be left on the hives until they are moved home in the fall. A great deal has been said about moving bees without closing them in the hives. We tried it this season, moving without screens and the entrance open. We piled them close together, about thirty or thirty-five to a load, and then covered the load with a sheet to prevent the flying bees escaping, as we move a distance of fifty miles.

This is a very easy way of loading them, but we found it very disagreeable to unload them, as great quantities of bees cluster on the outside of the hives, and some of them are crushed between the hives by the jarring of the load, which makes them very angry and difficult to control even with smoke.

The bees moved to buckwheat, build up well and usually have enough stores for winter. There is however, the danger of getting into foul brood when moving to a new location.

The making of increase very early in the spring can be made quite profitable by experienced beekeepers.

The buying of package bees from the south has become quite a common practice, and we have found by placing them in packing cases on top of strong colonies, with a very thin board between them, and a small entrance on the side, that they will soon build up into very good colonies of bees.

We expect to repeat this coming spring, a very successful experiment we tried three years ago. About the middle of April, nuclei were made and packed in a large group, together with a large stove-pipe up through the centre and a small oil lamp under the bottom. This kept an even temperature of seventy degrees. We kept this going for about five weeks. Eight nuclei were made from two colonies of bees, and they gathered 530 pounds of clover honey that season. Of course, the queens must be ordered from the south for this work very early in the spring.

In conclusion; keep the bees together in strong colonies for the light honey crop. Then, as near the finish as possible, make good strong increase, and if there are stronger colonies in the apiary, some disarmament policy must be carried out to prevent the strong from robbing the weak. The best remedy is to use a bee-tent, and never allow a single drop of honey to be exposed. I know some good apiarists are guilty of this, and they will surely pay up for it some day.

Mr. Holtermann said that to a large extent success depended on the kind of weather which follows making an increase. He had never tried to make it in the spring, but rather to have as large a number of colonies as possible producing in the spring, and not taking a chance of decreasing the honey from clover. One method of increase he liked better than any other, was to break up the colonies at the close of the white honey flow, even if he was not going to have any flow after that. He did not pay any attention to where the queen was, except to glance at combs. He broke the colonies in two, filling the space from which the brood and honey had been taken with empty combs. He liked to move them away to another apiary so as to divide the bees evenly, and had splendid results in that way. The increases were marked, the first colony being No. 1 and the increase also No. 1; the next, No. 2, and the increase No. 2. Then if he found the queen in the first pair, he knew she was not in the other one, and thus could readily find where the queens were. He did not use a bee tent, even if the bees were not working at all, and where conditions were normal and the work was rapidly done, the tent was not needed. He had never been stopped with robbing, because he had been careful to keep honey away from the bees.

Mr. Tillson said the method of increase that had given him great satisfaction was outlined. In going through the apiary at any time in the season, if he came across a queen cell in a good colony, he took that one frame and put it in a special small hive holding four, and set it away by itself, and if there were not enough bees on that frame he shook bees into it. It did not take long for the queen cell to hatch, and in a very short time he had two or three frames of brood. He did

not generally use foundation for that, but one frame of foundation would be all right. During the past season he had been forced to move two or three times, thus losing a lot of time, but from forty-four colonies he got nearly 150 pounds per colony; he increased to eighty-eight; and after selling ten colonies he still had seventy-eight colonies from forty-four. When those small hives got populated and fit to put into regular large hives, he transferred them and used the small one over again. This was one of the easiest and least troublesome ways of making increase that he found in a number of years.

DISCUSSION ON SWEET CLOVER.

Mr. Couse said that no doubt sweet clover had revolutionized beekeeping. Where he had sown it forty years ago at Beeton it was still there; and soft maple and basswood trees that he helped to plant forty-two years ago were there along with the sweet clover to-day. Sweet clover will grow almost anywhere, and stay where it is put. It is being sent to the Dominion Experimental Farms, and is being used extensively all over Canada.

Mr. Abbott said sweet clover was only in its infancy, and education in regard to it must be conducted with a great deal of discretion, and the question must be considered whether it was going to benefit the members who were being educated to use that plant. Sweet clover would be largely used for green fodder, and would thus be cut just at the time it would benefit the beekeeper. If the community was educated well enough in handling the plant, the ordinary farmer could get as much off the ordinary plant for bee pasture as off the annual plant. If we educate a man so that he can cut it with a binder, some six or eight inches high, he can take off two and a half tons of first class silage, and then the plant will be in a shape to produce honey for the beekeeper. Beekeepers must educate the farmer for his own benefit if they were going to get the other.

Mr. Holtermann said he was very sensitive about the quality of sweet-clover. The United States has tried to send alfalfa honey into Canada, especially into the western market, and they do not want it at all, no matter how cheap it is. He would always try to oppose the thought that sweet clover honey was the equal to any extent of either white clover honey or alsike.

Mr. Root of Medina, Ohio, agreed with Mr. Holtermann to a certain extent. The quality of honey was a question of locality and individual taste. He would not for a moment try to sell a customer sweet clover honey mixed with alsike and say it was equal to alsike, but if a man had got used to eating and using sweet clover honey with its cinnamon flavour, it would be hard work to show him that the white clover which he had not used was as good as the sweet clover. He was brought up on clover, and no honey in the world was to him equal to clover; and if any amount of sweet clover was put in, to pass off as clover, he would say it was good honey but not as good as what he had been used to. Thus the question was rather relative. The real point was, he would say, that sweet clover was better than any fall flow that we have had, and it can be got in such a way that there is a continual flow after the alsike is gone. That question has to be worked out. The annual was probably just as good. He had been over the United States from the west to the north and south to see where sweet clover was grown, and he had not seen any biennial which in three months' time yield the amount of humus, or hay or bloom, that the annual did. In his

own case, in the neighbourhood of Medina in three months the biennial sold on the same day, the same as the other prices in Ohio. If they could get biennial seed at six cents a pound it would pay to put it in their localities, not because they were going to mix it with the other, but have it planted at a time when it comes with their fall crop, if they could get slightly inferior honey to follow that it would be all right.

Mr. Byers said that sweet clover had its place, and in many States and many parts of Ontario it was a panacea to the beekeepers. In other sections he believed it was going to be a curse instead—in localities that are extensively engaged in growing alsike clover seed—for if they took a crop of sweet clover off a field they would not take alsike clover off that for several years. In sections where they were trying to keep the farms clean for growing alsike seed he considered it almost criminal to advocate planting sweet clover. In some places farmers will not allow a machine that has been engaged in threshing sweet clover to go into their barns. He did not believe that beekeepers would benefit by driving out alsike for sweet clover, for the latter was now a drug on the market. He was not knocking, and wanted to give sweet clover due credit for what it was worth.

Mr. Couse said his experience was like Mr. Byers', and he had made attempts to keep sweet clover from home and sell it in districts where they did not grow alsike. Last spring he had a nice bunch of No. 1 alsike, and did his best to clean the sweet clover out of it, but found eight sweet clover seeds to every ounce. Speaking as a beekeeper, it was a mistake to go into sweet clover where money was being made with other clover as in his section.

Mr. Neil asked Mr. Root if he had any experience in wintering bees on sweet clover.

Mr. Root replied that he knew that beekeepers in the west and south were wintering on sweet clover the same as any plant, and he would say that for wintering purposes it was equal to any other good honey so far as he knew.

A Member asked whether sweet clover would grow up and be of any benefit for silage.

Mr. Root replied that he had seen it cut off five or six inches high and then it bloomed afterwards and yielded a little honey.

Mr. Abbott asked if anyone had found a second growth alfalfa produce heavily this fall.

Mr. Krouse replied "yes;" that his second flow came from alfalfa.

ADDRESS.

Hon. Manning W. Doherty, Toronto.

Your attendance here in such numbers indicates that you are a real live organization. I feel that as Minister of Agriculture it is my duty to take every opportunity to meet those interested in the various branches of agriculture and get their views, so that I may the better be able to administer my department. I am intensely interested in the development of agriculture in all its branches in this province, because I am thoroughly convinced that the shortest road to

prosperity in this country is to increase agricultural production in every way, and in all branches, and to develop markets and open up all channels of trade which can be materially assisted by government agencies.

If the heads and officials of any department did not keep in close contact with the men and women who are daily performing the practical operations in connection with any branch, they would be devoting their time to the solution of problems that did not concern the operator in their every-day operations. It is with the desire of keeping such intimate touch and learning the views of all concerned that I take every opportunity and accept invitations to attend association meetings. I take it that the Department of Agriculture belongs to the people of this province, particularly to the agricultural people, and I am simply one of yourselves there, administering the department for the time being; and I want those engaged in all branches of farming to feel that the department is theirs, and that we are there for the sole purpose of helping agricultural development. I want the beekeepers to feel that we are there to give advice and to receive criticism, and I assure you that the door will always swing open to you, and we will appreciate your coming, whether with criticism or assistance, that we may do better for the beekeepers of Ontario.

Your industry is of very considerable national importance, very much greater than is commonly suspected. I understand that in this province we have about 9,000 beekeepers, and this last year the production was over 28,000,000 pounds of honey, with a total cash value of $3,500,000. That is a very considerable item in our production, because there is a danger, in endeavouring to increase production, that we may devote our time to developing what we consider the main branches and neglect some of the lesser branches, which in themselves are highly important; the returns from which are largely cream over and above the ordinary activities of the individual in many cases. This is why I feel this time that such branches as beekeeping and poultry raising should receive very close attention, not only from government departments but from the people, because the national obligations facing this country are very heavy—a debt of $2,500,000,000, requiring $560,000,000 a year to pay interest on the debt and our running expenses. It is a big obligation, a big burden for a population of only about 8,500,000, but the obligation can be carried and ultimately discharged. This country has possibilities undeveloped, that makes us all optimists in spite of the fact that it takes about $62.50 for every man, woman and child, to pay the interest and running expenses. To discharge that obligation requires that this country shall double and treble its exports.

To my mind, our obligations can only be handled in two ways—by the reduction of the obligations, which means by increasing our exports: and by increasing the number of shoulders to carry the burden, that is by immigration and increasing the population.

I am given to understand that it is not within the bounds of probability, at least, that this province will, in the near future, become an exporter of honey, but that you could very considerably increase your production without having caught up with the market. But that is neither here nor there, because it is consumed in the home market, and it probably means that in some other line our exports would be increased to that extent. Your association gives every evidence of being a very live organization, and I have always had a very great

liking for those who are fond of birds or animals or bees or flowers, because I have never found a person who was fond of these things who was wholly bad, but nine times out of ten they have pretty correct ideas and sane views as to their duties, not only to their fellowmen but also to their country.

Your association has done a lot of good work in fighting disease, in disseminating the most up-to-date information among the beekeepers of the province, and in my opinion the time has about arrived in your industry, as in some other of our agricultural industries, when you should look forward to taking a further step. I do not at all pretend to be an expert with bees, for although my father kept bees for years I got off into live-stock and have devoted nearly all my time to that; but the handling of all those industries, as a rule, is along similar lines, even though one may not possess expert knowledge of each individual line. I think your association should take steps to standardize the grades of honey you are putting on the market. I am not going to define the different grades, which would be determined probably by colour and flavour, specific gravity, or whatever the experts would decide; but I believe it is quite within the range of possibility that your association could put on this market, your products graded and bearing the stamp of your seal, which would be a guarantee to the buying public of the quality of the honey they are buying.

This is almost a religion with me, because I am so anxious to see the agricultural industry of this country put on its feet in the shortest possible time. I have surveyed the advancement made by other countries which are our keenest competitors in the foreign market, and which can even come here and compete with agricultural products in our own country; I have followed the systems adopted by those countries, as every man who would be successful should study intimately the policy pursued by his successful competitors, for everyone can learn a whole lot from the other fellow, especially if he proves that he is a real competitor. In looking over the systems followed by such countries as Denmark, New Zealand, South Africa and some of its branches, and Ireland, we find that a system behind which they absolutely stand solid is that every ounce of their product that goes out of the country is government-graded, or graded by an association which stands as a guarantee for the quality of the product. Danish bacon goes to Great Britain as our great competitor, every carcass, every side, having passed inspection. The same thing applies to their butter, and that is why they are able to displace us. Danish butter No. 1 means Danish butter No 1, and a man need not have any hesitation about buying it. If he is buying it for sale again he does not need to see it, for he knows exactly what he is going to get, and he can send it away 500 or 1,000 miles, and deliver it to a customer without any worry as to the product not being exactly as he expects it to be. The same thing is true all along the line; and to my mind our country must, in the near future, see to it that every pound of agricultural products that leaves this country carries the stamp of grade that is an absolute guarantee as to quality. This country cannot longer afford to allow any individual or corporation or number of corporations to put our products on the market of the world as Canadian products, without having a guarantee that the goods are up to the grade for which they are sold; because every time that this is done it works an injury to Canada. We can make as good butter in Ontario as any province or country, but to-day

Ontario butter means nothing in the eyes of the buyers of the world, because in Ontario there is good butter, and there is also butter which it is but little better than criminal to market. The same thing applies to other lines of products.

Now, there is a great difference in the qualities of honey. I was noticing this matter last summer, and wondering just what the foreign markets for honey were. At that time I had not been informed that there was no chance of this country being able to take care of its own requirements for many years; but I noticed that in other countries they discriminate in quality. For instance in the British market, Australian honey was selling at thirty-five shillings a hundred on that day, New Zealand honey was selling at seventy-five shillings; and the honey from the West Indies was selling at forty-five shillings; so that there was a great difference.

In the first place, standardizing the grades is important. Another work that I believe your association could well undertake would be the economical purchase of your containers and supplies, and the standardizing of your containers. A little later I will attempt to show you why these things cannot be done by any other method than your own organization. You may say, "Why cannot the government do it?" I will tell you why. To my mind the government has been trying for many years to do a whole lot of things, and has not succeeded in doing very much, because when the government attempts to do something, the people, while they may not openly resent it, sit back and are not very active in supporting it, because they feel that it has been shoved down their throats.

In the matter of the grading of honey the same thing holds true as in the grading of anything else. For years and years people have been talking of grading fruit in this country. If the government had stepped out and said, "You must grade your fruit. No peaches, no pears, no plums shall be put on the market that are not graded," probably the government with a big staff and force could have succeeded in putting it over. But they never could have succeeded as well as a fruit organization, a big co-operative organization with thousands of neighbours, with 75% to 80% of all the fruit growers of the province in the organization, who say to their own men, "Here, we want this fruit graded so and so, and if you don't grade the fruit that way we will fine you or put you out of the organization." Now, the members will be perfectly satisfied, because it is their own organization that is speaking to them, not some government-armed law that is forcing it down their throats.

I had an example of that this summer. We have started a fruit organization in Ontario that I have hopes will, inside of five years, revolutionize the fruit industry of this province: an organization that will not permit such a thing to take place as occurred this year, when thirty car-loads of apples came into this province to take the place of our Ontario apples when we had apples here of our own. This organization will put Ontario apples in their proper place in the markets of the world. No country on earth grows better fruit than we can. When in the Old Country last year I attended a show where Canada or Ontario was not at all in it in competing with the dominions of the British Empire in fruit. I said to our agent-general there, "How is this? We are selling thousands of barrels of apples here in Great Britain; this is our great consuming market, and we have better apples than are being shown here." So I made up my mind that that would not occur again, and this year I gave

orders and we had the apples collected and sent over, about three carloads, and a man with them to see that they were in good shape, and were pitted against the whole British Empire, and as you probably saw, we won the Grand National Trophy as the best in the whole British Empire, and we won four gold medals and five silver medals. (Applause).

Now, the point I am getting at is this: Organization of the fruit men themselves, not with any government control; but with the management in their own hands, selecting their own men, and firing them when they see fit, and all the rest of it. It is their own organization. If nothing happens to this fruit organization, inside of a few years I guarantee there will be no foreign fruit come in here when we have fruit to sell, and we will regain the Western Canada market which we have practically lost. And why was it lost? Because people in Western Canada would not buy our apples. They could buy a car-load of British Columbia apples, No. 1, No. 2, No. 3, whatever grade they wanted, and they would get that grade exactly. If they bought Ontario apples they were liable to get anything, and the trouble was that very frequently they did get anything. (laughter), and as a result British Columbia to-day has 60% of the market of the three prairie provinces in apples, and they have no right to it. Ontario apples have suffered because there has been no organization. I take off my hat to British Columbia fruit growers, I admire them; they are in a sister province and they have gone ahead, and they deserve credit. They have organized an association; there is not a man in the association in British Columbia who has any right at all to sell his apples; the association does all that. He delivers his apples to the association, which grades the apples, and packs them and sells them on the markets of the world, and this year they have shipped carloads of their apples right direct to New York city and got a tremendous price for them.

I sent Dr. Creelman over to Denmark, and the first fruit store he came to he found British Columbia apples right there in the window. He went to Sweden; they were talking of emigration from Sweden, and I sent him up there to investigate it, and the first fruit store he came to on the street had British Columbia apples, because they have an association that guarantees the grading of the stuff, and thus they have put their stuff on the market all over the world. They have standardized their packages. They put their apples up in their standardized boxes, that are convenient. They stick right on their boxes the name of the association, the name of the province, and now that stamp has come to mean something to the buyers in Europe. So your association should take a step forward and standardize your containers, and adopt a particular label that suits you, and in the purchasing of those containers your association could do it very economically.

Another thing that the association can do that cannot, to my mind, be done successfully in any other way, is in the matter of increasing home consumption. I do not know what the consumption of honey is per capita, but I feel that if every person knew the food value of honey, and had that impressed upon them, and they were shown the various ways in which they could use honey, that the home consumption of honey might be doubled and trebled. There are some very outstanding examples of this in the last two years. I have talked this to diarymen, because our consumption of cheese in this country could be trebled, yes, and quadrupled. We could eat four times as much cheese as

we are eating to-day, and the industry as well as the people would be the better for it. But there is no association big and strong enough to put on a campaign to see to it that the cheese that goes to our own home market is good cheese. The reason we are eating so little cheese is because it is so seldom that we get good cheese. (Hear, hear). Nine time out of ten you go into a restaurant or hotel, and if a man is wise he will not eat it at all—unless he wants his wife to be a widow. (Laughter). But in the old country, go into any kind of a restaurant and ask for Ontario cheese and you get good cheese. When I was over there for four weeks I ate as much cheese as I would eat here in six months. Why? Because it was good cheese. I told the dairymen that if they had an association they could increase the consumption of cheese in this country, and I will tell you how they could do it.

Very briefly let me tell you the story of what took place in California. In one section down there they are largely interested in the growing of raisins. The raisin growers were pretty nearly bankrupt, because there were only about four big buyers in the whole of the United States, and those big buyers simply raised and lowered the price just enough to keep enough people in the business to grow raisins: when any other people went into the business, and they though they were going to have more than they wanted, they just lowered the price, and when there were a lot of people going out of it they would raise it half a cent, just to keep the growers alive. As a result they were nearly all bankrupt, and raisins were selling for three-quarters of a cent a pound; the banks got frightened, and the growers got desperate. There was a young American lawyer of Italian descent whose family had been raisin growers, a pretty capable chap who turned out to be one of the most brilliant men in this co-operative business on the continent of America—Saprio—and he said, "Why not form an association, and govern your own business?" They did so. I am not going into the story of the fight, but they got together, and 60% of them went into the association, and inside of three years they increased the price from three-quarters of a cent a pound to five cents a pound, and they increased the consumption in the United States by 300%, yet the public were not paying any more for raisins, either: that is the peculiar thing about it. As soon as they got started they saw that once they got the price above a cent a pound, where there was money in the business, there would be a large number of farmers going into the growing of raisins, and there might be danger of their producing more than the home market would consume. They got statistics of every country in the world, found out how many pounds of raisins per capita each country was consuming, so they took the one that had the greatest consumption as probably representing the maximum. They saw that the United States was away down low, and then they started their campaign. They engaged seventeen of the brightest young salesmen, and instructed them in the intricacies of raisins, and started them out, and they went around the United States to every town and city and taught the bakers in those cities how to make raisin loaves, showed them that they could make more money in baking raisin loaves than baking plain loaves. They went around to all the women's institutions and every thing else and showed the people how they could use raisins. The result was that although the price went up five cents a pound they increased the consumption of raisins in the United States by 300%. They then began to see that the day would come in four or five years when the United States would be eating all the raisins

they could grow; so they picked out the country that was eating the least raisins, and they took seven of those men and sent them over to China and Japan to teach the people there how to eat raisins. No private man can do those things, because his turnover is too small: but a big association can do such things.

To show you how useful that association is, after I had been telling the dairymen this, and showing how they could do the same thing in this country, I went to my office the next day and found on my desk a very nicel-worded letter from California Raisin Growers' Associations, right from Los Angeles, and it said,

In the various States of the Union we have been working for years with the various branches of the agricultural department, and our co-operation with them, we believe, has been, to their service and to ours, of mutual advantage. In your Province of Ontario no doubt you have various associations and organizations that are working throughtout the country and giving courses of one kind or another. We would be delighted to do everything in our power to assist those organizations in their work. We keep a staff of experts whose services would at all times be at their command. Would you be kind enough to send us a list of the names of the presidents and secretaries of those various associations in your province? We would be very much obliged. Yours truly."

I knew what it was going to do; but I take my hat off to efficiency. I do not care whether it is a boy who is cleaning boots or the man who is making a wage; the fellow who can do the job right, and is right up to his job all the time. is the man that I admire; and here was an association that I considered was right up to its job. I knew what they were going to do; sent them the names of all the women's institutes and all the rest of it, and I guarantee that the secretaries of those Institutes will get letters from them saying that if they will kindly communicate with them they can arrange their courses, and they will send their experts, and those experts will come over here and teach your wives and sisters how to put raisins in every blooming thing they cook. (Laughter).

That is good business. That just shows what an association can do. I have no doubt that in the matter of your product your association could do a very valuable work.

As I was coming down to this meeting through the poorer part of the city I was struck with the way an association could do good work by teaching the poor people in these cities to feed their children a pint of milk a day, which would be the greatest service that could be rendered to those children. Any association would do a great work that would teach those poor families that the cheapest food they could feed their children was milk.

A DELEGATE: "And honey."

HON. MR. DOHERTY: And honey. You cannot beat the combination. Now, I say our associations have unlimited opportunities for doing this kind of work. In the matter of craft and development of export trade, to my mind there is no other way in which is can be accomplished. You men know a great deal more about your business than I pretend to know, but it would appear to me that after having carried on your campaign for years—which has been to a large extent an educational campaign—the time has pretty nearly arrived for you to take another step and work your organization into a sort of co-operative association, or have a sister organization to take care of those points that I have enumerated.

I simply want to say that the government of which I am a member stands ready to do everything in its power. which it legitimately can, to assist you in whatever course you decide upon. Let me also say, though, that I am one of

those who believe—and I claimed this before I became a member of the government, and I still think it is true—that these organizations are better off if kept free of government control and domination. They are better standing on their own feet. The government can ruin those organizations by interjecting itself and its influences, which kills initiative and kills the sense of ownership. I believe it is the duty of a government to do everything in its power to assist these various branches of our industry in organizing and getting on their feet; then it should withdraw and not have any control or in any way dominate.

I was asked a little while ago to provide funds for a queenery, and the funds have been provided, and this is being established, and Mr. Millen tells me that it will be in operation this year. I stand ready to receive suggestions from the beekeepers of the province as to any further assistance which our government can give your association, and I am sure I wish you every success, and I am indeed pleased to have had this opportunity of saying even these few words.

THE PRESIDENT: "Are there any questions you would like to ask Mr. Doherty before he leaves us?"

A DELEGATE: "I would like to ask what success the Niagara Fruit Growers had in disposing of their produce this year, and why that association did not extend to other sections of the province?"

HON. MR. DOHERTY: "I will answer my friend with pleasure. I will first answer the last part of his question. The reason they did not extend is probably because I advised them not to do so the first year. It was a tremendously big undertaking for them. Even restricting their operations as they did, they have done about $2,000,000 of business this year, and they did not get started until May. I called the first meeting in November a year ago and there were a lot of difficulties and prejudices to be overcome, and this took a little time, so that the organization did not get into working shape until spring. They engaged the services of Dr. Creelman, and he was taken ill and had to resign, and they had to get another man, and consequently did not begin until May. I think it is very fortunate that they decided to restrict operations this year to the fruits that they did, because the great danger in the new organization is that it may smash the first year. They have to go through the first year and develop their machinery and their men, and when they develop their organization they can go on and add to it each year. I would rather see these things start on a fairly small scale and grow, than start on a big scale and go 'bust.' They were very successful this year. Of course there will be lots of criticism, but I don't care. If you form an association the first year, the second year there is going to be plenty of criticism, and there is something wrong if there are not criticisms. I told them to expect to be criticized, but not to be discouraged because of criticisms. They are meeting me to-morrow to discuss the matter of extending their operations next year, and I have pointed out to them that they will have to take in practically the whole province and all the lines of fruit next year. Having gone through the first year they feel more confident, and they are now prepared to go ahead and take care of both the home market and the export market. This first year they have done something that you people could well do—a point I overlooked in talking to you, though that was probably more evident in fruit than in honey—and that is, an organization of this kind can regulate the flow of the product to the market and the proper distribution of the markets. The way our fruit was marketed and distributed in this country was nothing less

than a crime. Toronto to-day would have a flood of peaches so that thousands of baskets would rot; while Ottawa, Parry-Sound, and North Bay would probably not have a peach. Now, that is poor business. If we have been educated by the educational systems of the twentieth century, surely we can devise some more economical method of distribution than that. The association has practically stopped all that. Halifax got its store every day; so did Port Arthur; but they got just as much as they could use and no more. I was talking to a man in Port Arthur in the early part of the season and he said, 'This is the first year I have been able to get asparagus that I thought was really any good. If I order No. 1 asparagus now I get it; if I order No. 2 I get it, and it is always true to its grade.' A little while afterwards I was talking to a dealer down here and he said to me, How are grapes going to be this year? I said the prospects were pretty fair, and he said, Well, I guess the asparagus crop has been a failure, hasn't it? I said, No, I don't think so; Why? The asparagus season was over at this time, and he said, Well, every year there is always a week that we can get asparagus here for almost nothing. It comes in here and we buy it then, and sell it to the canners, but I have none of that this year; there was no glut in the market here this season. I didn't tell him, but there never was as big a crop of asparagus in Ontario since this province existed as there was this year, but Halifax got asparagus every day, so did Port Arthur, North Bay and Montreal—they all got it. That is one of the great advantages, not only to the grower who gets a bigger price, but to the consumer.

Mr. Abbott: "Could you give us any suggestion of how the pails would be marked in the grading of honey?"

Hon. Mr. Doherty: "I am not an expert in honey. You have plenty of men here who can give you advice, but the way this is done, and done to the greatest satisfaction where the product is graded, is that the grades are pooled. Suppose peaches No. 1 sell for $1.10 a basket, and No. 2 at $1.00, every man who puts in No. 1 peaches gets $1.10, whether his peaches go to Halifax and sell at $1.50 or to Toronto and sell at $1.10. They are all paid $1.10 a basket for that day, while No. 2 get the $1.00 a basket for that day. The marking of your grades is a matter for your association."

Mr. Abbott: "Honey would have to be marked in some distinct manner so that the public would know what they were buying, supposing the wholesaler sold it to the retailer."

Hon. Mr. Doherty: "Certainly, that is a very important matter; The product must be stamped, and the stamp carried through to the consumer, otherwise the producer will never get a real benefit. The trouble with our cheese to-day is that a man can buy No. 2 or No. 3 cheese and put it before his customer as No. 1."

Mr. Abbott: "Each man's name should go on the pail under a certificate in some shape by the association as to quality."

Hon. Mr. Doherty: "I would say both the association's name, the grade, and the man's name."

Mr. Holtermann: "Don't they have a number?"

Hon. Mr. Doherty: "Each man has a number in fruit, and they can go right back to the man. When I was over there they found some peaches that were sold as No. 1; the carload went down east, and some of those peaches were not No. 1, they were poor No. 2, and he telephoned and wanted to know the reason. They said, "We are very sorry if those were sent.' They had a couple of baskets

that had numbers on them to show who sent those two baskets, and they saw the address on them and knew who packed those peaches, and they sent for the man and said, 'Why did you pack those peaches and mark them No. 1? You know they are not No. 1. Now, we are going to fine you $100 for this, and if this occurs again you will have to give up your membership in the association.' That man paid $100, and I assure you for the rest of the season he was as good a packer as they had, because it is their own association, and they know that no outsider is trying to force them to be good. I think the principle should be to have a guarantee."

MR. PETCH: "I would like to know how you can tell the supply that is coming on the market, say Montreal, when they are importing a carload of pears from the United States, for instance, on the same day?"

HON. MR. DOHERTY: "I was over there one Saturday and saw the executive of this fruit association transacting their business. There were seventeen fruit farmers sitting around the table (while I sat back listening) with their manager and sales manager, discussing how they were going to dispose of pretty nearly $2,000,000 worth of products, and they had cablegrams and telegrams from practically every country in the world and every point in the United States where there was likely to be any competition, giving exactly the prices, the condition of the markets, and all the rest; and here they were, seventeen farmers, sitting around there discussing that. I said, 'If they don't make a dollar more out of this thing, how much better off those men are, how much farther ahead they are, how much wider their view and their vision; they have got to realize how interdependent we are one on another, or one class on another, one city on another, and our own country on another. Probably they are sitting around that table with their own telegraph wires right in their own office, and getting messages all the time from all those points, knowing whether it was good business to ship carloads to New York, Chicago, or wherever they were selling their fruit.' Now, they will make mistakes, of course, absolutely the same as any person else, but they have the best and the latest information that they can get from the various points of competition. They know the crop, in grapes they knew the crop in the whole United States before there was ever a grape cut. They made their deals then, and had their grapes sold, and they sold somewhere over 400 carloads of grapes this year. They use every possible source of information from points that are likely to come into competition with them. The same could be done with honey; you find out the estimated crop of honey in every country that is likely to come in competition with you."

MR. GILLESPIE: "We all know the raspberry crop was very large. I would like to know what price they got for them."

HON. MR. DOHERTY: "There were several other crops I know that they had very considerable difficulty in handling this year, being a new organization, and no matter what criticisms were offered they stuck to it, because you must remember there is no man you can depend upon so thoroughly as the man that is in the same business as yourself. Stick to him."

W. E. BOYS: "I am from the Niagara district, and have been interested in fruit in the last three years. The people this year have been very pleased with the new fruit association, and more than pleased with the grape association, and if the beekeepers formed an association of their own for marketing the honey it

would be the best thing going. The returns for raspberries this year were about four dollars a crate, and they were one awful mess. If it had not been for the association the raspberry producers would have lost half their crop."

Mr. Holtermann was sure that the convention had been impressed with the value of what Hon. Mr. Doherty had said, and with the energy and force with which he had said it. It was well known that he himself had not had very much faith in co-operative selling of honey until Mr. Doherty began his crusade for co-operative selling of grapes in the Niagara District. He still thought there were greater difficulties connected with co-operative selling of Ontario honey, but he had no hesitation in saying that he believed if the Minister would take up the beekeepers as he has dealt with the fruit growers there was a chance of making a success of the movement. He had not been strong on co-operation himself, considering that he might sell his honey crop as well as any other person in the province, and he had had as many as twelve carloads of honey on order from the Canadian west; but if this movement started he was perfectly willing to give the association every opportunity and sell honey in that way, and let go the good position which he considered he occupied at present. The Minister having taken hold of the matter with such energy he believed the beekeepers would do well to consider what he had said to them.

Hon. Mr. Doherty: "In reply to Mr. Holtermann, I can assure you that I would give every ounce of energy that is in me to support you in your organization. I would not be doing what is right in my position if I were to support one branch of agriculture any more strongly than another. The Department will be absolutely behind you with every force that we have. While it is true that Mr. Holtermann might market his honey as well as any other man in Canada, yet he has to suffer from the other fellow who cannot market his stuff as well; that is the trouble. The other fellow, who has not the knowledge of the business or the business ability or organization or connection that Mr. Holtermann has, will sell, and Mr. Holtermann's business is injured by that other fellow, who says, 'I have to sell my honey anyway, and I am going to sell it, and let it go.' We take care of all that stuff. It is all brought into the one, and nobody is going to smash your organization, or selling connection, or injure your crop."

Wm. A. Weir was very glad to hear the discussion on points of marketing, and he was sure all beekeepers appreciated Mr. Doherty's remarks regarding the marketing of honey, which would be borne out by the experience of the beekeepers—first, that the essential factor was to get a proper set of grades. The difference of opinion regarding different grades of honey to-day was alarming. They had been grading what was called amber honey or dark honey in the last few years, but they would not get a stable market until certain grades of honey were recognized and fixed in the minds of consumers. The Minister was also quite right in urging standardization of product under an association label, so that a check could be kept on all shipments, and while the matter had many difficulties he did not think they were insurmountable. At the last convention a committee was appointed to draft some ideas along this line, and he hoped to hear from them during this convention. They must bear in mind that each stage of progress involved education. The home market had absorbed practically all the honey produced in Canada, and last year the local market of every beekeeper had developed more than in the past four or five years. The chief point now to be emphasized was education in the matter of grades and getting on a standard of

quality and package, and also of crate. With these three problems solved, the way would be open for an organization which would take care of all surplus crop and aid in distribution, as Hon. Mr. Doherty had pointed out. He had made it a practice to sell on the basis of sample, and had no reason to go back on that practice, which confirmed good dealing, as the consumer knew exactly what he was going to receive, and it gave the salesman confidence which would only come from good understanding. He hoped to see fruit from this movement.

H. G. Sibbald said he had enjoyed very much the Minister's talk and the discussion. Years ago he was one of the most enthusiastic young beekeepers for co-operation, and a co-operative society was attempted, but very many difficulties were met with, so many that they quieted down to simply a Honey Crop Advisory Committee. The beekeepers had something that the fruit growers had not to contend with—that every beekeeper had a local market, and if beekeepers were told they must not sell to anybody but the association, they would be putting off a large part of the consumers from getting a direct supply of honey from the beekeeper in whom they had probably more confidence than in an outside man, because they had had his honey and they liked it. He thought the best plan would be to allow local beekeepers what they needed for their home market, and send the balance to the association, because it was desirable to sell all the honey locally that was possible. He valued the home market, and the shipping of honey involved freight costs and commission and profits that came in between the beekeeper and consumer, and it would be troublesome and wasteful to have the honey shipped back to the local beekeepers to supply their locality. Honey could not be sent to any one point under half a cent for freight. It granulated and had to be liquefied, which would add probably another quarter of a cent a pound, and it would have to be re-tinned. It might pay to do that, for the satisfaction of customers, but the price of honey would have to be raised quite a little before the purchaser could get as much as he had been getting. Many beekeepers like Mr. Holtermann and Mr. Byers had a good connection and could sell their honey without any trouble, and were not anxious for co-operation; but the last point Hon. Mr. Doherty made was splendid—that of helping the other fellow, who did not know how to sell; thus being able to get a bigger average price than at present for the honey. The export market was good the last few years on account of the war, but matters were returning to normal, and something had to be done. The Department of Agriculture and the college at Guelph were making beekeepers, and this association was very generous with its information, telling how to produce more honey and keep more bees, so that while a few years ago a man who kept 100 colonies was considered a pretty large beekeeper, we now hear of 1,000 colonies kept by one man, and a great many keep 400 or 500, and they were producing more per colony than before. A better system of selling must be introduced before long. He was willing to go into the co-operative association, but he thought it would have to be done by a few big beekeepers getting together and starting a sister organization rather than trying to sell the honey through the Ontario association. The Minister's speech had been put in such a convincing manner that he was sure it would help wonderfully if the co-operative movement could only get started.

Hon. Mr. Doherty: "Mr. Sibbald has pointed out the difficulties. Let me say that twenty good reasons were pointed out why we could not form a fruit association; but the thing to do is to forget all about those, and go ahead and do

it, providing that you are on a sound basis. There is no use going ahead unless you are operating on a sound, sane business basis. Difficulties?—why, I could stand here and name you forty difficulties. The difficulty about the home market could be taken care of in five minutes by a man signing up for his whole crop, and saying, 'You will have a right to ask for such a quantity for sale at home at such and such a price—the association setting the price.' (Applause.) If you read the particulars of those organizations that have become successful you could understand why a few difficulties would not worry me. When the British Columbia fruit men were trying to form the Okanagan Valley Fruit Growers there were speeches showing why it would be a failure, and so on, and they had quite a fight; but last year they made $229,000 net profit out of the Okanagan apples. That will give you some idea of what this thing can be made to mean, besides selling all the apples of the province. I am pleased to have had this opportunity of showing how co-operation is a success. Professor Millen is intensely interested in the question, and we will do anything we can to assist your operations.

Mr. Liddy wished, before Mr. Doherty retired, to move a very hearty vote of thanks to him for his address.

Mr. Holmes, in seconding the motion, referred to the raisin growers increasing their price considerably without the consumers knowing it, and also increasing the consumption by 300%. He also acknowledged the great help that had been offered by the head of the Department of Agriculture. (Motion carried amid applause.)

T. A. Shield said the beekeepers owed thanks to the foresightedness of the Executive Committee in securing the Hon. Minister to start this ball rolling. To his mind it was the biggest step that the association had ever taken. If co-operation was started it would have to be whole-hearted. He urged more interest in the election of officers so that the association could get behind the co-operative movement whole-heartedly.

J. L. Byers said he had always taken the ground that until a real need was felt for a co-operative movement it could not be made a success. If such movements were analyzed it would be found that their inception was due to the fact that other associations had been driven to it. Up to the present it had not been difficult to dispose of the honey product, hence many beekeepers had been lukewarm. It would be much easier to organize when the position was reached that they could not sell. Last year when the matter was proposed at Guelph he had opposed some drastic steps because only about ten per cent. of the membership was present, and he felt the question was too important to be dealt with by such a small proportion of the association, and also that the suggestions were very crude. He realized that no man lived to himself, and he thought it incumbent on each, not to allow their personal inconveniences to hinder any work of that kind going on. In his own business they had had no difficulty in disposing of their product. In two or three places where they had shipped carload lots they would have had the privilege of repeating orders, and could have sold three or four times as much honey as they produced. Still, if this matter were put in tangible form it would have his willing co-operation, and he would be prepared to sacrifice any personal interests he might have. He had opposed this proposition before, not on principle, but because he did not think the beekeepers were ready for it; but if a co-operative society was safeguarded it would have his blessing, and he would be with them to help make it go.

R. C. Petch said he was quite in sympathy with the co-operative movement provided it was carried on on sound business principles.

Mr. Tillson said that one could not be a reader of the magazines of California and Texas without being impressed with the fact that the co-operative associations had been carried on successfully, even though they may have been driven to that plan. He would be glad to hear from Mr. Root, who knew the western situation from A to Z.

E. R. Root said he had listened with a great deal of interest to what had been said, and he thought the time was ripe for the movement, especially when the association had the backing of the Minister of Agriculture. He would follow his advice right straight through. The only thing that stood in the way of success was the selection of a business manager who was altogether a beekeeper. It was not always wise to take one of the old fellows. It was better to take a young fellow full of vim, who had studied the question thoroughly. He had been in California and watched the exchange, and while it had had its ups and downs in various ways, he thought that exchange had advanced the interest of the beekeepers on the sales, and had them tied on an iron-clad contract, and the price every organization has, but they now have an expert on this exchange matter whose advice they will get. They had gone through hard experience. When honey went down in price to 15, 16 or 17 cents they advanced money to the beekeepers on the sales, and had them tied on an iron-clad contract, and the price went down. He thought any organization that could survive an experience of that kind and not have every beekeeper mad at them was doing well. The Ontario beekeepers would not have to go through that experience, as they were starting off on an advance in price, and just at the right time, and conditions here would make a success of the organization. As Mr. Sibbald had suggested, the plan would be to take in some of the big fellows and then make an active and hard pull for the little fellows and get everybody in. It seemed to him that there was enthusiasm in the talk on this subject. As a buyer and bottler of honey he would say they would rather be in a position to know where the market was, and where it is going to stay, than to be here, there and everywhere. If the price could be stabilized that every man would get for the same grade of honey, and if the organization would follow the advice of the Minister—a man who certainly knows his job—as to who should be chosen as general manager, that was the important thing. There needed to be one head who can direct several others, and that fellow must be bigger than the average man. Some of these organizations were paying their managers a big price, but it was cheap considering what they could deliver and what they could do. He did not see any reason why the proposed organization could not succeed, and if there was anything he could do through his journal to boost the proposition he was theirs to command.

Mr Couse had been wondering how everybody was going to be got into this plan. They could not be compelled to go in, and there were going to be outsiders. It was also a mystery to him how the price could be regulated; he did not know whether it could be done or not. The address of Hon. Mr. Doherty on co-operation was one of the best he had heard, for the Minister was a clever man, an ambitious man, an industrious and a useful man to the country. He did not know whether the co-operative fruit growers had done this year anything better than an ordinary man, but he had heard a large dealer in Quebec say the other day, that he had bought his fruit from the Niagara Peninsula through a

regular dealer, and he paid fully as much as the co-operative man did, both buying on the same ground. The experience of Mr. Holtermann, Mr. Byers, and such men would be very helpful, and if they were going into export business he thought co-operation would be very useful, but he still had the idea of the individual man putting his energy into his own business. He thought a thousand business men having their own energy put in their own business was worth more than a thousand co-operative men, because he had found that no man would work for him as he would work for himself. He had said once to a fellow working for him, "You are going awfully slow," and the fellow replied, "Yes, but you are working for yourself, while I am working for you." The average man works hard and tries to compete with everybody else; a great many people would sit down and let the other fellow do it for them. He was not thoroughly convinced of co-operation in that sense, but naturally he was slow, perhaps too slow, and had never caught up. At the same time he felt that individuality was a wonderful force to-day, and there were beekeepers present who, as individuals working the market for themselves, could force the honey into different channels. There had been an argument in regard to marketing and distribution. The average produce man had many lines to handle, and Mr. Sibbald, who worked in that line once, said that such people could handle his honey much easier and cheaper because when they got an order for certain lines of goods along with honey they could deliver it more cheaply, whereas with honey alone it was very expensive. While one did not like to object in an audience like this, it was a good thing to bring out the points that were objectionable.

Mr. Brown said the incidents quoted by Mr. Couse were no argument against co-operation. He had had experience with co-operation in live-stock, and in more than one case dealers had offered and paid more than the co-operative association was paying, but they were paying it at a loss to themselves in an attempt to break up the co-operative movement. It was a case of every man being loyal to his association and sticking to it even if he had to take a cent or two less than some dealers offered.

Mr. Krouse said he had started the bee business about sixteen years ago as a side-line, but found it paid, and went into it as a business. He had tried to work up and handle a trade for himself, and had a good trade, but like Mr. Holtermann and Mr. Byers, if an association were formed on good business principles, he was willing to throw in his assistance with the rest. He had worked up a home trade of from eight to twelve tons of honey. Now, he thought, it did not seem right to ship that honey to some central point and have it come back there again; that involved a loss, and was bad business, but as Mr. Doherty had pointed out, that could be overcome.

Mr. Brown thought it was a simple matter to form an association for handling honey when they got down to brass tacks. Probably every beekeeper had his local market, and they should be allowed to supply that market, even the large dealers as well as the small ones, and ship the surplus to the central point. Marketing honey in the northwest should be as simple as possible. The question was how to get the small beekeepers into the movement. He would not start a co-operative association until after a campaign of education, picking out every beekeeper in the province and getting him registered and interested, and then it would be time to start the organization.

MR. HOLTERMANN said that quite a lot of discussion had gone on, and if anything was to be done, now was the time to do it.

MR. HOWSER said the question was whether the association was going to pay him to raise honey, and then, when men came right to his door, to refuse him the retail price, and let the storekeeper get every man the producer had got. He asked if he would be breaking the law of the association if he would sell a man all the honey he wanted in that way.

A DELEGATE: "No; not if you sell at the association price."

MR. HOWSER: "Suppose your association price was sixteen cents, and it cost eighteen cents to get it to Winchester, and then our retail man there was selling it at twenty-five, should I sell at eighteen? He would say, 'I won't buy that honey, because you are selling so that I can't make anything out of it.'"

A DELEGATE: "Sell at the retail price."

MR. HOWSER: "That would suit me fine. I would go right into it." (Laughter.)

MR. ABBOTT said the question at the bottom of the proposition was how a man was to distribute a certain amount around home, and on this he had a suggestion. In associations such as breeders, they had a registered mark for every breeder, and the head of the association sent a man to guarantee that the animals were registered as so and so. At present the great majority of beekeepers are specialists; they know good honey from bad. In the United States there are graders who grade foods and all those things, and they have to take the producer's word for it. What would be the difficulty of each man who makes honey having a government stamp on his own honey, and every can, whether sold at home or abroad, being marked No. 1 or No. 2, and if there is a complaint it has to go back to the association. At present, producers have to contend with No. 2 honey sold on the market as No. 1 just because there was no guarantee. What was needed was a stamp to standardize honey as No. 1 and No. 2 that belonged to the association. Producers would give a report every week to the association of what cans they filled, and it could be shipped from home. There could be a central standardizing station to which the cans of certain quality of honey were sent, and this would make the standardization certain, for it was a standard set by the association.

MR. LIDDY wondered why small fellows like himself should object, after the big men who were really interested had given their expressions as being thoroughly in favour of this proposition. He thought the time was ripe for a motion, and he moved:—"That in the opinion of this association the time was ripe for the formation of an organization similar to what has been described by Hon. Mr. Doherty."

MR. CHRYSLER seconded the motion, which was put and carried unanimously.

SECY. MILLEN: To further this action I would like to move that a representative committee be chosen this afternoon to go into the matter further, because we should have a great many more details than we have at present—in fact we have not any on hand—and a committee representing the beekeepers from the various parts of the province should be appointed this afternoon to report to this association to-morrow, at least some details as to how we shall proceed further.

MR. CHRYSLER seconded the motion. He said the association had gone through this matter fifteen years ago. They advanced to a point when it became necessary to do something definite, but something occurred to spoil it all.

SECY. MILLEN's motion was carried unanimously.

ELECTION OF DIRECTORS.

The election of Directors was then proceeded with, and resulted as given on page 4.

On motion of Secy. Millen, Messrs. Sibbald and Byers were appointed revising committee, to revise the annual report when it comes from the typist.

The Honey Crop Report Committee was re-appointed.

MR. SIBBALD nominated the re-election of the present committee on Honey Exhibits. (Carried.)

THE SECRETARY nominated Messrs. Weir and Brown as the Press Committee. (Carried.)

The representatives to exhibitions were elected, as shown of page 4.

COMMITTEE ON CO-OPERATION.

The following Committee on Co-operation was appointed:

H. G. Sibbald, J. L. Byers, R. F. Holtermann, F. W. Krouse, W. A. Weir, W. A. Chrysler, and Secy. F. E. Millen.

E. R. ROOT: I would like you to succeed and I do not see why you cannot. I do not think you could have done any better. I have watched those men at different times. I suggest that this committee get in H. B. Rauchfuss, of the Colorado Honey Producers' Association, one of the most successful operating exchanges, and he has been around it for the last twenty-five years, which is a fine record. I would write to the California Co-operative Honey Producers' Exchange at Los Angeles and get their form. I suggest that you take out from the two organizations their ideas, because they are worked out very carefully, two or three of the most expert lawyers in the United States have worked those out. One of the plans they have there may be found to work here. They have a rule by which, when a man signs up, he stays in for three years, and if he does not it is uncomfortable for him. He cannot get around the law. You have to hold men until the thing demonstrates itself. After it has run about three years there is a chance to do something. Get hold of those ideas, and adopt what is good, and throw out what will not work in this locality. I think they will be very glad to help you out on that.

REQUEENING COMMERCIAL APIARIES.

JAY SMITH, VINCENNES, IND.

It is not necessary to call attention to the importance of good queens if one wishes to get the most out of his bees, yet in truth there are few who fully appreciate the part the queen plays in honey production. In case one has properly wintered his bees and they have an abundance of stores in a brood nest ample in size, there will be a big variation in the amount of honey the colonies will produce. This variation can, in a large degree, be attributed to the age and quality of the queens that head the respective hives. The difference in a yield of fifty pounds and a yield of four hundred pounds is, in the main, merely the difference in the queens. Therefore it pays, and pays well, to look to the queen.

Now do not think that I am advertising queens, and advocating that you

purchase all or most of your queens to requeen your colonies. On the other hand, provided you have a good strain of Italians, I believe that it will be much more satisfactory all around, if you rear your own queens and then carefully requeen any colony that does not do the best at honey getting.

As to the methods of queen rearing, there are many. The simplest way is to go to a good colony and remove their queen and let them build cells. Then these cells are removed and given to the colonies to be requeened. While the simplest, it is also the poorest, due to the fact that the bees seem frantic to rear a queen in the very shortest time, and they therefor take larvae too old for the best results. If the beekeeper interferes and culls out the smallest cells, some better results may be obtained. A modification of this method gives much better results. Take an extra strong colony that has an abundance of brood and young bees. Remove their queen and all the brood. In about an hour, give them a frame containing eggs only from the best breeder you have. Now this colony has been supporting a large hoard of larvæ and the nurse bees have been feeding them in a lavish manner. Now, as we take away all the brood and queen they are in a fine condition to rear a queen, so when the frame is given them, they at once get to work and enlarge the cells and as soon as a larva comes out of the egg, the nurses are there to feed it most abundantly. This gives fine cells and they can be given to colonies to be requeened. However, this method has its drawbacks.

It will pay the commercial honey producer to learn the grafting method as invented and improved by Mr. Doolittle. Some have tried this method and failed, and have gone back to the simpler methods mentioned before. It is admitted that it will take a little more time, patience and study to master the grafting method, but when this is mastered, it has so many points of superiority, that it will pay to learn it. With it, you have things under control and are master of the situation. You know exactly when the virgin queens will emerge, so it is not necessary to leave the colonies queenless for a very long period when giving them the cells. I strongly urge the honey producer to learn and use the grafting method.

The first thing to do is to get the cells made ready for grafting when needed. We prefer to do this in the winter time when there is plenty of time. For this purpose we have twenty dipping sticks which are held in position in a frame so that they work through holes in heavy tin. In this way twenty cells are dipped at a time. They are then set on a cell bar and by the use of a brush they are painted with hot wax, in order to make them stick to the bar. They are then put away in cardboard cartons in which foundation is shipped. Let us now suppose it is time to begin queen rearing in the spring. The first thing necessary to do is to get a number of colonies in condition to build cells. It has generally been acknowledged that one of the most difficult points in queen rearing is the matter of getting the cells accepted. For this purpose we use the swarm box. This is made nine inches wide, and the depth to accommodate the size frame that is used in the apiary. It is covered on the bottom with wire screen cloth to make it bee tight. There are two covers, the inner cover is little more than a rim to keep the bees from boiling over the sides when the cells are put in the box. The opening in the top is large enough to allow three cell bars to be passed through with ease. The upper cover slides on top of the inner cover. A round

hole is made in the top cover to take a tin funnel which is used in filling the box with bees. This also serves as an opening to admit a Mason jar feeder.

There are many ways that may be used to get the cells accepted, some preferring one and others preferring another. However, practically all agree that the swarm box is equal to any method. Personally I believe it is superior to any that I have tried, and I have tried most methods that have the appearance of possessing merit.

We will now turn to the matter of getting the colonies in condition to accept and build cells. The main secret or knack in successful queen rearing is getting the colonies in *condition* to build cells. Further, it is not difficult to do this. To make it short, see to it that both the colonies that furnish bees to the swarm box and the colonies that finish the cells *are unusually strong in bees and have an abundance of food.* Frequently the colonies that furnish the swarm box bees are not strong enough. When this is the case they must be built up by giving them frames of capped brood from other colonies. All frames of honey, and in fact all frames that do not contain brood, should be removed and replaced with frames of capped brood from other colonies. This gives the colony a large number of bees, and better still young bees that act as nurses and bees to build comb. Now, if there is no honey flow on at the time, this colony must be fed liberally. Some advocate feeding a thin syrup and feeding a little at a time. I have experimented considerably on this point and I believe a heavy syrup about equal parts sugar and water give best results. This is given in a bottom feeder every evening. If no nectar whatever is coming in, two quarts per day is about the right amount. This will be more than they will consume, but the surplus is stored in the combs and saved. This puts the colony into the best possible condition for feeding larvæ and building cells. In the matter of feeding, there is an important point that has been overlooked by many and is, in many cases, the difference between success and failure. That is, that the colonies must be fed at least two or three days *before* they are given the cells. Feeding at the time the cells are given does little if any good. The bees need time to digest the honey and become fat in order to do the best at larvæ feeding and wax production. Therefore, the colony that is to furnish the bees for the swarm box must be built up with the brood, and must be fed three days before being used. The swarm box should contain two frames of honey and pollen. These are placed at the sides of the box. Cleats at the ends are provided to hold three cell bars.

The next thing is to fill the swarm box. Take out the first frame and set it aside. Look till the queen is found and pick her up by the wings and put her on the comb first taken out. Be sure to set all combs back in the hive in the same position they first occupied. In proceeding as described there will be no trouble in doing this. Now begin with the first comb left in the hive and shake the bees into the funnel in the swarm box till it contains not less than five pounds. It is well to weigh the bees for a time until you can accurately judge the number you have in the box. From five to seven pounds should be used. When the box is filled, cover the funnel hole with the cap of a Mason jar and set it away in a cool dark place. There is no place like a cellar or basement. I should judge that in Ontario, an ideal place would be the cellar in which the bees are wintered. I have a concrete basement, and back in one corner I make what I term the "bee dungeon" by stacking up hive bodies and supers. A door is made of hives in break-joint fashion so that no light can enter and yet one can walk in with a

swarm box in each hand and is not troubled about opening doors. The question has been asked, "How long should the bees be left in the swarm box before giving them the grafted larvæ?" We have been experimenting, and are lessening the time each year. If the bees are not daubed up with honey or syrup too much, they can be given the grafted cells immediately. We graft at three o'clock and fill the swarm boxes at one, so they are in there two hours.

The operation of grafting is a simple one. With the grafting needle that can be purchased from supply dealers, the larvæ from your best queens are lifted out and placed in the cell cups after they are supplied with a little royal jelly. This jelly is kept in a small porcelain jar. The jar and a jelly spoon made from the handle of a tooth brush can be carried in the pocket. Whenever one runs across a swarming colony, this jar may be filled. One is continually coming across queen cells, therefor, if he always has the jar and spoon with him, the jelly can be secured with little expenditure of time. The jelly is placed in an individual salt dish, and diluted with pure, clear water till it is about the consistency of the larva food seen in the bottom of the worker cell immediately after the egg has been hatched. A drop is placed in the bottom of the cells. Then the larvæ are placed in these. Many make the mistake of getting the larvæ too large. They should not be more than twenty-four hours old. At this age they are small indeed. A rule that is good, is to use a larva that will, when curled up, lay entirely upon the head of a pin. Three bars are grafted, before being placed in the swarm box. In hot, dry weather these bars of grafted larvæ will dry out and be injured if not properly taken care of. To care for them, take a bath towel, moisten it and spread it over the cells. In this way they will keep in perfect condition till placed in the swarm box. When finished, take them to the basement and lay them down all three together with the cells pointing up. Pick up the swarm box and give it a little jar on the floor, when all the bees will fall to the bottom. Now remove the upper cover and place the three bars on the end cleats and slide on the cover. Now put on a feeder. A quart Mason jar filled with a half-and-half syrup is good. The bees in the box having been taken away from the colony where they were feeding hoards of larvæ, now have their stomachs filled with larvæ food. They are in the best possible condition to feed larvæ. They are also in splendid condition to build out the cells as they are secreting wax. They realize their queenlessness to the fullest; therefore when the cells are given them they go to work and the cells are accepted and the young queens-to-be are given a splendid start. If all points are carefully carried out all cells will be accepted. It is not uncommon to have all sixty cells accepted and finished. However, this does not always happen. One should average about fifty-five out of the sixty. If he does not, he should seek out the cause of failure and correct his methods. The cells should be left in the swarm box about twenty-four hours. We usually remove the cells and empty the swarm boxes about six o'clock the evening after the day of grafting. This leaves them in the box about twenty-seven hours. I find it best not to leave them much longer. Upon several occasions they were left till the morning after the regular time, and the larvæ were not supplied with the abundance of jelly that they should have been.

The next step is to look to the colonies that are to finish the cells. For this purpose a strong two storey colony is necessary. First remove every frame in both stories that does not contain brood. Then fill out the vacant space with frames of emerging brood taken from other colonies. Place a queen excluder

between the two stories and be sure that the queen is in the lower one. Leave out one frame in the upper storey to make room for the frame that is to hold the cell bars. This colony should be prepared several days before it is to be used in order to have time for some of the young bees to emerge. If no honey flow is on, these finishing colonies must be fed the same as the swarm box colonies. As may be seen, this gives you a very powerful colony in which to finish the cells. This is very necessary if the best grade of queens are to be produced. The difference between a good queen and a poor one is largely the difference in the food that the larva received during the entire period of growth. If all queen cells contain dried up jelly after the virgin has emerged, you may be sure that it has had all the food necessary. If there is no jelly, you are sure to rear a percentage of inferior queens. This percentage will, of course, vary according to the amount of food the larvæ receive.

When time comes to empty the swarm box, it is taken to the colony from which the bees were taken. The cover is lifted off and the three bars removed. These bars must be given to three colonies to be finished, for one bar of twenty cells is enough for the strongest colony. A regular brood frame made to hold three bars is used. The first bar is put in the bottom "shelf" as the bees seem to do better when it is in that position. This is placed in the centre of the brood, in one of the finishing colonies. It is well to have uncapped brood next to this bar, for this draws the nurse bees close to the cells, and they will be finished better. The other two bars are given to the other two colonies that have been prepared in a similar way. This bar is left in that hive until "ripe," which is ten days from the date of grafting. As these cells will hatch on the eleventh day, they should be disposed of on the tenth day.

Now as to the matter of requeening. Many will find it more convenient to requeen by introducing the ripe cell directly to the colony to be requeened, while others will prefer to introduce the cell to a nucleus hive and after the virgin queen has mated and laying, to introduce the laying queen to the colony. Circumstances and the personal choice of the beekeeper will have to govern in such matters. When the honey flow is well on, and if there is no swarming, a cell may be given with little loss in bees to the colony, for the bees that would have come on from the eggs that would have been laid by the queen, if she had remained in the colony, would be too late to be of benefit for that honey flow. If another flow follows immediately, there would be some loss, so in such cases it is better to introduce the laying queen in preference to introducing the cell. No matter which method is used, I believe it is advisable to have in use a number of nuclei, for there are many times when one finds use for laying queens, and to have a few on hand is a great convenience. If one has some extra hive bodies, they can be used for nuclei to advantage. The manner of giving the cell to hive and nucleus is the same. All that is necessary is to wait till the hive has been queenless from twenty-four to forty-eight hours, and give it the cell by gently pressing the cell against the side of the comb. Most of them will be accepted. If any should be destroyed, give a second one and it will be accepted. I have never found that cell protectors did any good. In fact, in an experiment the loss was more with the protectors than without them.

The swarm boxes should be emptied in front of the hive from which they were taken. In giving the finishing colony the next bar of cells, it is well to

raise the first bar that was given up to the next shelf, and put the new one at the bottom. We graft twice a week so that the first bar of cells is capped by the time the second one goes in.

The question is frequently raised as to how often a colony should be requeened. This depends upon the conditions of the apiary, the locality and the beekeeper. We may be safe, however, in making this statement, that very few commercial honey producers requeen as often as they should. There are two ills that prevail among beekeepers in all parts of North America; they do not leave sufficient stores with their bees and they do not requeen enough. I believe that the Ontario beekeepers should do more queen rearing. Nothing will so quickly eradicate European Foul Brood as requeening from your best Italian stock, by giving the diseased colony a ripe queen cell.

There is one other matter I wish to mention. While here, I have heard of a number of cases where American Foul Brood has been started from buying queens. One party stated that he introduced ten queens and immediately eight of these colonies developed American Foul Brood. Another party said he was sure he got American Foul Brood from a package of bees. All of these parties said the disease was contracted from the honey with which the cages were provisioned. Now that candy can be made without the use of honey that is every bit as good as the best honey candy, there is no excuse for honey being used to provision either queen cages or package cages.

Several years ago, we were advised to use commercial invert sugar instead of honey. After trying this, all agreed that it was not good for long shipments in hot, dry weather, due to the fact that it would dry out and become too hard. But the chemists told us that chemically, honey and invert sugar were the same. Some time ago I thought I would do a little experimenting on this matter to find out where this apparent discrepancy lay, for we knew invert sugar dried out worse than honey, and yet we had no doubt that the chemist knew what he was talking about. I was not long in locating the trouble. The heavier a syrup, the higher is the temperature required to bring it to the boiling point. I found that honey boiled at a temperature of 245 degrees but that the commercial invert sugar boiled at a temperature of 235. Plainly the difference was due to the fact that the invert sugar contained too much water, and as soon as the water evaporated, the feed became hard. To prove this, we made some home made invert sugar as follows: one pound granulated sugar and one half pound water and ten grains tartaric acid. This was boiled to a temperature of 250 degrees so that it was some thicker than the heaviest honey. As we surmised this made a candy that does not dry out, even as quickly as candy made with honey. It has been put to all sorts of tests, and is equal to, and we believe superior to honey candy.

F. W. Krouse said that if he found a colony whose queen had been killed by accident, there would always be a lot of cells on the sealed brood side of the combs, but those would be poor queens, as they were drawn out from too old larvæ. He pinched those all off, and left the best and largest cell he could see that was drawn from larvæ that had not been sealed over. In that way he could get a pretty good queen. He tried to requeen every two years at least.

E. T. Baixard had an idea of a nucleus box to place on the side of the full colony in which the brood queen cell could be put. There is a hole in the side of the hive, and a double thickness of queen excluder, and it is opened up after

a certain length of time to allow bees to go back and forth. A cardboard can be run up between if desired.

Mr. Harkness doubted whether it paid a man running a commercial apiary to raise queens as Mr. Smith did. Referring to Mr. Bainard's suggestion of putting the nuclei at the side, about ten years ago when he worked at queen rearing, he had worked two, one on each side, with his old queen in the centre, and he thought he might rear some queens in that way. It is all right in theory, but a failure in practice. Rather than fussing with home-made appliances and schemes he thought it better to go to a man like Mr. Smith, and buy a few queens if needed over and above those that can be raised from cells, by the beekeeper himself. He thought requeening exceedingly important, particularly in districts where there was Foul Brood. He was surrounded with European Foul Brood on all sides, but in his yard it was found only in colonies that had old queens. If a man got careless and did not keep introducing young queens, he believed that even Italians would go under, where the rotten stuff is all around.

A Member: "Do you find the hybrid or the black bees in those cells that are infected?"

Jay Smith said the beekeepers ought to raise their queens, and they would get better results. Where there was an early honey flow, they found European Foul Brood did not amount to anything, so it was American that he talked about, and that was different.

Mr. Chrysler said that he liked queen rearing, but he had something else to do with his time. He had done quite a little grafting, with fairly good success with a great many queens, but had found queens that he raised that were not so good, because he had not done it as well as he should have done. Time did not permit him to graft in Mr. Smith's way.

E. R. Root thought the biggest thing he had got hold of to-day was the method of making candy outlined by Jay Smith. If he had known that a year ago he could have saved his organization several thousand dollars.

THE BEEKEEPERS' JOURNAL.

The President: "The next matter to come before us is our official organ, the *Beekeeper's Journal.*"

Mr. Cowan made a statement in reference to the *Journal*, showing how the printers' strike, the increased cost of paper and other material, and the higher wages, had affected the publication of the magazine as to the cost of producing it, and also the difficulty of getting advertising and new subscriptions. He gave figures showing the actual loss that had occurred in connection with the publication.

A general discussion ensued in which various methods were suggested for increasing the circulation of the magazine, to greater activity on the part of district secretaries, and thus improving the finances by encouraging greater advertising, which was based very largely on the number of subscribers. The question of contributions by expert beekeepers was discussed, and it was pointed out that

in order to secure such contributions, the writers should be paid. Some of the principal beekeepers volunteered their services in this respect.

Mr. Neil finally moved:—"That we continue *The Beekeeper* this year, monthly if possible, the Board of Directors to control that."

Mr. Smith seconded Mr. Neil's motion, which was carried.

In answer to a question.

Mr. Cowan said that the circulation of the Journal was about 2,100. He appreciated the resolution, and said his company was willing to continue the magazine and would do their best to make it acceptable and successful.

BEEKEEPING IN NEW ONTARIO.

R. F. Holtermann, Brantford.

The speaker said that two years ago an address on beekeeping in New Ontario was given at the Convention, which set even old men like himself pretty well on fire. He had tried to be receptive to new thoughts, yet not ready to act on every new suggestion made. If he had made a mistake at all it had been along the line of taking suggestions and trying them more than he should. But after hearing that address, and knowing friends in New Ontario—now speaking of the line between North Bay and New Liskeard and up there—he went up and made very careful enquiry. He met one man in particular whom he had not known before, who was very kind: he kept bees himself. One of the first men he met was a man who said that the crop of honey was not anything like the statement that was made at this association. One reason or another was given as to why they had not done any better than they had in New Ontario, and why the number of colonies had decreased so much. When the solid facts were all put down, there was only one man in the whole township that could say he had made a success of honey production in that country, and that was a Mr. Snider, who had been living at Caledonia years ago, and he had sixty-five colonies of bees. There had been great honey yields there, and there had been times when there was very little. We had read in the paper of how dry that part of the country had been; how the fire swept over large territories there: and the speaker had concluded that if he put bees down there he would have to run a certain amount of risk. However, he had gone as far as to arrange with a young man who was a beekeeper in a small way, as to taking bees into that section of country. The section where his bees were situated had been so dry that he saw no outlook for the honey crop in that country. He next wrote the Ontario Government, who controlled the railway between North Bay and that section of country, asking for a definite promise that the bees would be taken in hand at North Bay and immediately shipped north: and though he was sure that the government was willing to help any good enterprise in that direction, he could get no definite promise, but was told he would have to take chances and go by the ordinary methods. A man who went there from near Ottawa, had lost nearly all his bees in getting into that country, but he had not known how to ship them, and the bees were crowded down on the combs, and he had made other mistakes. The upshot was that the speaker was afraid to send bees there. He had watched that country since, and had received reports that the year 1919 was exceedingly dry,

and they had a poor crop. He had an intimate friend in that country, Mr. J. R. Hand, who used to be at Fenelon Falls, a thoroughly competent beekeeper, and he arranged for him to report faithfully what he was getting. Mr. Hand had bees already, and kept track of what was got from them. The result was not nearly as satisfactory as in this part of the country, and the speaker had very grave doubts whether ordinary colonies could be wintered with any kind of certainty of not having heavy loss; and he made up his mind that if he put bees up in that country he would take them to a warmer section to winter, and then take them back in the spring. This would mean a tremendous amount of work, and in the face of that, the danger of drought and frost had to be run, and the crops might not be very good, so he came to the conclusion that he did not think he would ever try it.

Mr. Agar said he was the man who gave Mr. Holtermann such a splendid report from the north. While he was not living there now, having sold out and moved away, that was not the fault of the country, with which he was just as much in love as ever. He pointed out that New Liskeard and Haileybury were on the line with the southern boundary of Manitoba, and the distance from that southern boundary to Dauphin City, Manitoba was between 150 and 170 miles, and bees were being wintered there.

Mr. Floyd: "One man has been wintering bees for twenty years at Dauphin."

Mr. Agar: "That is 150 miles farther north than Haileybury. He was acquainted with the men named by Mr. Holtermann, though he did not personally know what Mr. Hand's experience was, but he would accept Mr. Holterman's word after that. The report he had given to the convention two years ago was absolutely right as to results he got, but he left the country that spring. He filled the boxes up till there were ten boxes. Langstroth; he put them out on the 20th May and never went back to those bees until September, and there were 1,720 pounds of honey from seven colonies, and there was nobody looked after those bees from the 20th of May till the 7th of October. At that time he did not intend to rush everybody into the country, but the country was all right, and all that was necessary was to understand the conditions. Speaking of the agricultural possibilities of the country, he said that in a part north of New Liskeard that was all bush eighteen or twenty years ago, with trappers and hunters in control, John McFarlane had sold 160 acres with farm stock and implements, about four miles out from New Liskeard for $20,000; and his neighbour sold his bare farm for $17,000. That proved that there was something there, and where grain crops can grow honey can be produced. My bees were sent up in two one-pound packages about the 20th of May, and from those I extracted 200 pounds of honey, and I took the increase from each one, and I wintered them all over. I figured how many bees I wanted for next spring, and I bought 125 one-pound packages, and by the fall I had some packages that were no better than when I got them. That fall we got as high as five pounds per colony of aster honey after the frost came, and then it set into winter till you could hardly do a thing with your bees till spring, and I was minus 100 one-pound packages of bees. I have never touched one-pound packages since; but you see how easy it is; you have a great big crop one year, and then figure out how many bees you can buy, and then the season is bad and leaves you in a hole. The colonies I wintered over that year did well. It just so happened that the pound packages, the way they

came through, and one thing and another, they did not turn out good. I put in thirteen years in New Ontario, and it is far better now than it was then. I like the country yet.

Mr. Munro said that his father kept bees in Northern Ontario for fifteen or twenty years and had always had success. He had no difficulty in wintering them at all. They always had good clover pasture in New Ontario, always had a good crop, and success with bees.

Mr. Haines, of Sudbury, said that he had got his first experience in bees at Guelph. There were only three beekeepers in Sudbury district that he knew, but they all had very good success. One started with eleven colonies and finished with twenty-five, and had about 2,500 pounds of honey, and enough left in the hive for the bees. A Mr. Lee, a man of about eighty, had seventy-five colonies in winter quarters last fall, having taken off 8,000 pounds of honey. Speaking for himself he started with five colonies in the spring, and got some package bees, most of which came in poor condition, and finished up with eleven colonies, and he had 1,100 pounds of honey, with fifty pounds left in each hive. The speaker said he wintered outside in single cases. Mr. Keswick had wintered bees for four winters in Sudbury. Mr. Lee wintered some outside and some inside, and has had very good success. There was plenty of blossom and nectar in that district. Everybody in beekeeping up there was very well pleased.

REPORT OF PROVINCIAL APIARIST.

F. Eric Millen, O.A.C., Guelph.

The 1921 Spring Report showed that the Ontario Beekeepers had less winter loss of bees than for any previous year reported. While the spring was not entirely favorable, in all sections of the Province, the bees were in fair to good condition for the main honey flow. The final white honey crop report showed an average of seventy-five pounds to the colony against forty-six pounds in 1920 and forty-four pounds in 1919.

During the past year the same difficulty occurred as in previous years, in that the Department could not secure enough experienced beekeepers to act as apiary inspectors for sufficiently long periods. Sending men into counties where they are not resident or acquainted, means loss of time and increased expense. Another serious feature is that it is impossible to start inspection work until the main honey flow commences, because of the uncertainty of the weather during the fruit bloom and dandelion period. To try to overcome these difficulties, the following letter was sent to all County Secretaries in those Counties where American Foul Brood exists:

"For the active season of 1922, we are going to try a somewhat different form of inspection than has been here-to-fore followed. We are asking the County Associations where American Foul Brood exists, to recommend at least two men (four may be recommended to act as apiary inspectors in the County for the coming season. This should be brought to the notice of your Association at the

fall or winter meeting, so that two or more men can be recommended to us. To make this scheme successful, the County Associations should only recommend men who have the following qualifications:

They should be successful beekeepers. Even though they only have a few colonies, they should be able to control American Foul Brood in their own apiaries. They should be tactful and men who have the welfare of beekeeping interests at heart.

The County Association should be very careful in the selection of these men, as if unqualified men are recommended, their appointment would not be considered by the Department, and at the same time, American Foul Brood would not be controlled in the County. The Department pays all reasonable expenses, and the amount of pay would probably be about five dollars per diem. The work would continue while the funds lasted. The idea is to get the inspection work started as early as possible; during fruit bloom and dandelion period if possible. I feel sure that if the Association considers this seriously and will enter into a spirit of co-operation with this Department, that we can largely control American Foul Brood, and in time gradually lessen the serious losses from this disease.

We would be very glad to send you any other necessary particulars, and urge upon you the necessity of having your meeting sufficiently early so that the names of men recommended may be sent into this office not later than March 1st, and their appointments recommended."

The above letter was sent to the following County Secretaries:

Brant, Wm. Grieve.
Bruce, Geo. Neil.
Carleton, C. B. Gooderham.
Dufferin, B. H. Smith.
Dundas, Helen Baker.
Durham, G. T. Hampson.
Essex, H. L. Wilson.
Grenville, H. E. Eyre.
Grey, Geo. A. Robertson.
Haldimand, Wm. Atkinson.
Halton and Peel, E. A. Kindree.
Huron, H. H. Sparling.
Kent, C. E. Chrysler.
Lambton, R. C. Fretz.
Lincoln and Welland, N. Critz.
Middlesex, E. T. Bainard.
Norfolk, Chris. Quanbury.
Ontario, A. W. Barton.
Oxford, John Newton.
Perth, Dr. E. H. Eidt.
Simcoe, R. G. Houghton.
Stormont, Wm. Graham.
Victoria, G. Ed. Johnston.
Waterloo, Harvey J. Zeller.
Wellington, Chas. Ryde.
Wentworth, M. Johnston.
York, J. C. Steckley.

American Foul Brood is present in some other Counties, but these have no County Associations.

With the co-operation of the Counties, and with capable resident inspectors, a considerable amount of inspection work can be accomplished quite early in the season and before the beekeeper is very busy in his own apiary. A few fine days when Maples, Elms and other early sources are yielding, will enable the inspector to visit some of the apiaries where conditions are bad, and possibly prevent the spread of disease where these apiaries are left until late in the season.

Another desirable feature of the County Associations having a share in the apiary inspection work is that the inspection will be done in those Counties which co-operate most thoroughly with the Department.

During the season thirty-seven apiary inspection demonstrations were held in the following places:

County	Date	Place of Demonstration	Demonstrator
York	May 21	Town Hall, Thornhill	Wm. R. Agar
Wentworth	May 24	C. L. Mapes, 28 Emerson St., West Hamilton	Wm. R. Agar
Toronto	May 24	O.A.C. Apiary, Guelph	F. Eric Millen and others
Norfolk	May 25	Elijah Graves, Vanessa	Jas. Armstrong and O. A. Sipple
Wentworth	May 30	J. L. Byers, Binbrook	Wm. A. Weir
Huron	May 31	Haberer, Jacob & Sons, Zurich	F. Eric Millen
Huron	June 1	Irving Bros., Clinton	F. Eric Millen
Dufferin	June 1	R. B. Endacott, Orangeville	Wm. A. Weir
Bruce	June 2	Jas. D. Little, Teeswater	F. Eric Millen
Haldimand	June 2	Wm. Atkinson, Selkirk	Wm. R. Agar
Simcoe	June 3	J. J. Carruthers, Avening	Wm. R. Agar
Wellington	June 3	Chas. Ryde, Eramosa	O. A. Sipple and J. A. Munro
Middlesex	June 3	A. G. Langford, Rt. 5, London	Jas. Armstrong
Parry Sound	June 4	H. B. Purdan, Powassan	Wm. R. Agar
Northumberland	June 6	H. Twigg, Campbellford	W. Scott
Ontario	June 6	J. F. Anderson, Oshawa	Wm. R. Agar
Bruce	June 6	John S. Schrank, Port Elgin	F. Eric Millen
Lanark	June 7	J. C. Elliott, Carleton Place	Jas. Armstrong
Grey	June 7	H. D. McIntyre, Durham	F. Eric Millen
Perth	June 8	Wm. Ische, Rt. 3, Stratford	A. E. Hutchinson
Grey	June 8	C. C. Crosskill, Clarksburg	F. Eric Millen
Russell	June 8	W. P. Cherry, Russell	Jas. Armstrong
Prescott	June 9	E. H. Clare, McAlpine	Jas. Armstrong
Simcoe	June 10	W. J. Goodfellow, Stroud	A. E. Hutchinson
Stormont	June 10	McClellan Bros., Milles Roches	Jas. Armstrong
Northumberland	June 11	A. C. Leslie, Rt. 4, Brighton	W. Scott
Waterloo	June 11	Herbert Gardener, East St., Galt	Wm. A. Weir
Prince Edward	June 16	G. L. Goodmurphy, Wellington	Wm. A. Weir
Welland	June 22	Alvin Kinsley, Port Colborne	F. Eric Millen
Stormont	June 22	Wm. Fay, Aultsville	Wm. A. Weir
Glengarry	June 23	Alex. Dickson, Lancaster	Wm. A. Weir
Durham	June 24	Wm. Beatty, Elizabethville	Wm. A. Weir
Ontario	June 28	Mr. Gulley, Uxbridge	Wm. R. Agar and W. Young
Victoria	July 1	Wm. R. Agar, Brooklin	Wm. R. Agar
York	June 9	W. C. Kitchen, Weston	F. Eric Millen
Dundas	July 18	Nehemiah Summers, Winchester	F. Eric Millen
Oxford	Sept 13	Jas. McKay, Box 1, Rt. 2 Tavistock	Wm. R. Agar

The attendance at these demonstrations varied from twenty to over two hundred. Apparently these demonstrations are as well attended as when first commenced by Morley Pettit in 1910.

The following acted as apiary inspectors and demonstrators during the season of 1921.

H. Ronald Clemens, O.A.C. Guelph
Jas. Armstrong, Simcoe
Wm. Agar, Brooklin
Wm. A. Weir, Toronto
W. P. Devins, Toronto
Horace Haines, Rt. 5, Fenwick
H. C. Harris, Alliston
Hector Inch, Rt. 3, Port Hope
Neil Robertson, Northwood
Warrington Scott, Wooler
O. A. Sipple, Tavistock
S. A. Stewart, Cataraqui
Robt. E. Barber, 70 Waverley Rd, Toronto .
J. A. Munro, Slate River Valley
R. E. Oldfield, Rt. 1. Inglewood
T. H. Shield, Peterboro
B. H. Smith, Amaranth Sta.
Wm. A. Young, Toronto
R. G. Houghton, Rt. 3, Bradford
A. Eric Hutchinson, Mount Forest
Jas. M. Patterson, Vinemount
Wm. Thompson, Rt. 3, Indian River

APIARY INSPECTION.

R. G. Houghton, Bradford.

Every branch of Agriculture has its problems to contend with, to keep them in condition. The Live Stock Association has to be on the alert to combat disease. The grain growers and corn growers are face to face with a serious conditions in the corn borer and the ear worm, and apiculture is no exception. From my earliest recollection we have been facing a serious menace in our old friend Foul Brood, as the late C. C. James said some years ago when he came to address the beekeepers in the old Arena. As he looked about and saw such an improvement in the attendance since he was last present, he thought perhaps he had dropped in to the wrong place, until he heard some one speak of the old enemy Foul Brood. My opinion of the situation is that we are trailing years behind the disease, and if the funds had been available twenty or twenty-five years ago to put on the present staff of inspectors in place of only one, when there were only a mere handful of bees compared with the number of colonies in Ontario to-day, the disease could have been headed off and the only hope to be able to cope with the situation is to put on more inspectors and do more efficient work. When I say more efficient work I mean, do the work systematically, and be sure to make a trip to where disease has been found. I am afraid some of the work of cleaning up that has been reported to the department as done, has not been very well done. I believe, too, it would be in the interest of the beekeeping industry if the inspector, where he found disease, could return in a couple of weeks when supplies for clearing up were secured, and treat a couple for the inexperienced beekeepers.

Then, too, the inspector should be an inspector of bee appliances as well as bees. I am sure much of the failure in treatment is due to faulty equipment, especially poor honey houses. I was surprised this Summer as I went from place to place, to see under what conditions some beekeepers were doing business. In cellars, in back kitchens, in wood sheds; and the careless way in which honey and comb was left exposed to the robbing instinct of the bees. This is not so bad where there is no disease, but how would you, even as experienced beekeepers, treat and make a success under condition of that kind?

I think it good business as beekeepers to start a propaganda for more and better honey houses, and we might include in this propaganda, wax extractors, as there is a great shortage among the small beekeepers especially.

I believe some inspectors are too easy for the good of the bee industry. Some years ago if a colony or two was inspected, it was taken for granted, if no disease was found in these two, that the yard was clean; of course there are cases where it is time wasted to go through a whole yard, we must know the beekeeper, and if he is in the game for a living and is able to point out the disease, he is fairly safe to leave alone, though not always. I would think it good business when the disease had gained much headway, even among professional beekeepers, to go through the whole yard, and have a report sent to the Department and make sure of a second trip. Too much has been taken for granted for the good of the cause. If the first inspectors who came to my yard twenty years ago had been very firm and made the second trip, I would to-day have dollars where I must be content with cents. It would help to stay the disease

in its onward and destructive ravages, if a copy of the Act and full treatment could be sent to every beekeeper, whether a member of the Association or not.

It has been suggested to me through our local association, that a tax be placed on each colony of bees kept, and this money used for inspection purposes this would discourage the careless fellow who makes little or nothing from his bees anyway, and encourage the right man—be he little or big—to keep more and better bees. One diseased apiary, and a small one at that, in a community, is a menace to many who would otherwise have clean apiaries. I saw a case of that kind last summer.

As to the progress of the disease in the locality where I inspected last summer (Simcoe County)—in every locality I was able to visit, I found American Foul Brood quite prevalent. I also found another brood which I diagnosed as sac brood quite prevalent. Some apairies were quite seriously infected, and I would like to hear about that in this convention, I only found one case of European Foul Brood and it was in the yard of a careful beekeeper who had found it before I arrived, and had immediately introduced a young and vigorous Italian queen. When I made a second visit later in the summer, I could find no sign of the disease, and the colonies were coming along quite well.

As to the treatment of the disease as advised and recommended by the Department, not all are agreed that it is a positive cure. My experience in a yard I treated in 1920 was eighty per cent cured, and twenty per cent where the disease showed again in 1921. There was so little of the disease and the colonies so much stronger that I had no difficulty in curing them in the spring of 1921, and I found no traces of it in an early examination in the fall of 1921. I think myself that where it exists in a very advanced condition it will take two treatments to effect a complete cure.

To sum up the matter, I would say, get more money, and secure several more competent inspectors if possible. Compel them to make a second trip. Have them bound in some way to show no special favours to any one. Start a drive for better equipment, particularly honey houses and wax presses and inaugurate some system of taxation and try to get ahead of the disease. By so doing I believe in the next twenty years we can head off the ravages of Foul Brood. I believe that if the Hon. Minister of Agriculture had made the trip with me last summer, and saw as I saw the great loss in honey that was being borne by beekeepers, and also the serious loss to the Province of Ontario in food stuffs, he would have been impressed to such an extent that instead of $4,000 of a grant, it would soon be $10,000.

Mr. Agar said that in Uxbridge he found six cases of Foul Brood, and got the Government to send up a wax press, which was set up. He warned the beekeepers against putting their comb in boxes and having honey running out, and to keep it from the bees. They melted up the wax free of charge, and cleaned everything up. He had a demonstration one evening and put two colonies through the treatment, so that the local men would know how to do it. He did the same thing in Orillia, but in all the country between, there was nothing done. He had been at the work for three years. The first year he was sent to four townships in Ontario County, and the next year was sent back, and expected this year to have gone, and in about a week cover all that was necessary, but this was not done. That was the objection to the old system. A year ago they had an inspectors' convention at Guelph, and he understood an inspector could

stop at the beekeepers' expense and treat their bees and in a good many cases this was done, but while that ground was well covered for two years he knew that disease still exists there. He asked how many years it would be before that section would be just as bad as ever The new system was to suggest that three or four men should take over the work in a county. It was up to the local associations, whose loss it was if they did not get good men appointed as inspectors. Last year was the first time he had to hire a special constable. He had talked to a man for over three hours, and offered to treat his bees free of charge, but he would not agree, so three special constables were hired to burn the thirty-seven colonies of bees, every one of which had a super, and some had two. All the honey was thrown down into a deep hole.

Mr. Agar said he had offered him that if he would put his young swarms in the foundation it would be all right. Some that have been destroyed did not have Foul Brood, but the combs were crooked. They were box hives, but the man would not do anything, and there was no choice. However, there were not many beekeepers like that. The old system cost about seventy cents per colony to have the bees inspected, and it would take about $70,000 to inspect the Province of Ontario, and if that sum could be got for three years, and then drop back, it could be kept under control.

Mr. Weir said his experience was similar to Mr. Houghton's and Mr. Agar's. The great difficulty was to get men to do the work at the price beekeepers were able to pay. Several good men have taken hold of the work, but seasonal conditions required that when inspection was to be done their own yards required attention, and they couldn't be blamed for giving first preference to their own. If the proposed plan of nominating two or three beekeepers in a district to do inspection work should fail, he thought the only plan would be to secure at least three men permanently to work the year round under the department, and not only inspect but conduct educational work in fall and winter, at salaries that would induce them to stay. The whole drift of experience in Apiculture in combating disease is showing itself that way. He thought the present plan should be given a fair trial.

Mr. Houghton said it would not be profitable to take the inspector from the north into the south unless they would be better received. He had found objection only in one place, from a man who had treatment two years ago of his whole yard, and who was loath to have it done again: but all his bees were found clean.

Mr. Agar said that a man working in his own neighbourhood was often blamed for crowding out other fellows so that he would have more room for himself.

Mr. Eyre asked who would select the local inspectors—would this Association recommend names and the Government send them, or would the government do it?

Delegate: "The County Association will select them."

Mr. Wilson said that since 1915 there had been no inspection in Lambton County, and the condition is getting very bad. Beekeepers had taken it on themselves to form an inspection fund, giving whatever they would, and altogether they had done well. The idea was to use the Department's funds as far as they would go, and keep the inspector on until the work was finished. Next year they would go at it stronger than ever, and they were going to try a local

man. He endorsed all that Mr. Agar had said in regard to the inspector working in the other end of the county. He had inspected for three years and never had any trouble except with one man six miles from his home. Mr. Armstrong was sent up last summer for inspection work and at one yard he was met not very kindly simply because he did not inspect the speaker's yard first, as the parties knew he was one of the main men in promoting the inspection fund, and they thought if there was any disease he was the first one to get it, and they wanted to hit him hard. The complaining party had 178 colonies with European Foul Brood, and he had opposed the inspection, as he did not think there was any such thing as disease. In raising the fund some beekeepers gave as high as twenty-five dollars; they gave it for their own protection. If small men did not want to give anything there was no compulsion, but it was for the protection of the bigger men. If men will not pay attention to their colonies where there is European disease they will soon put themselves out of business, but at the time they are a menace to the industry.

Mr. Fowler asked if places that are not inspected this year were held over for next year's inspection.

Mr. Agar thought that was the plan.

RESOLUTIONS.

Mr. Holmes, Chairman of the Committee on Resolutions, introduced the report as follows:—

Your Committee on Resolutions beg leave to make the following Report:

(1) We have in mind the very successful meetings of this Association formerly held on dates in the early part of December, and we would recommend the December dates as desirable and best in the arranging of future annual conventions of this association. Left to the Executive.

(2) We have noted, with very great pleasure, the arrangement of the Apicultural Exhibit at the Canadian National Exhibition. This exhibit seemed faultless from every viewpoint, and very great study and skill were exemplified in the staging, throughout. We would, therefore, recommend that the best thanks of this association be tendered the gentlemen composing the committee in charge, for their untiring efforts in this behalf.

(3) Resolution from the Middlesex Beekeepers' Association:—That whereas the spread of Foul Brood among bees is on the increase and that the greatest danger is from those having a small number of colonies kept in a careless, indifferent way, and the moving of them from place to place, all of which makes it very difficult for the Inspector to locate all the disease in that particular district:

We therefore would ask the Ontario Beekeepers' Association now assembled, to take some definite action by having a clause added to the Provincial Foul Brood Act making it compulsory for all persons having bees in their possession to register each year with the Department of Agriculture. Harry O. White, President; E. T. Bainard, Secretary. Adopted.

(4) The Directors of the association recommend:—That the Directors recommend to the present Convention that the Secretary be empowered to negotiate for the purchase of package bees and nuclei for members of the association under proper safeguards.—Adopted.

(5) Moved, Seconded and Resolved:—That, whereas, The Ontario Beekeepers' Association have learned of the death of Prof. F. W. L. Sladen, Dominion Apiarist, which sad event took place at Duck Island, Lake Ontario, on September 10th, 1921.

And whereas the deep interest ever manifested in the bees and honey industry by the late Professor has brought him in close touch with this organization, while his kind and courteous manner on occasions of his visits to our regular, or special meetings, has commanded the admiration and respect of our members:

Resolved that the sincerest sympathy of the Association be tendered his family.

(6) Resolved that the sincerest sympathy of this association be tendered the family of C. J. Chisholm, late of the County of Hastings, whose death took place since our last annual meeting, and that a resolution drafted in accordance (by the Secretary of this association) be sent to the family of our late friend and co-worker at Belleville.

(7) Resolved that the sincerest sympathy of the Ontario Beekeepers' Association be tendered the family of the late J. D. Evans, whose death took place since the last annual meeting, and that a resolution drafted in accordance (by the Secretary of this Association be sent to the family of our late friend at Islington.

(8) Resolved that friendly greetings and sympathy be conveyed to John Newton, of Thamesford, on account of his being injured in a recent distressing accident.

(9) Resolved that the best thanks of the Ontario Beekeepers' Association be tendered our American visitors, Messrs E. R. Root and Jay Smith, for valued contributions to the programme of this convention, and for the inspiration of their genial presence with us on this occasion. Also resolved that an expression of appreciation to be conveyed to Prof. Floyd, Provincial Apiarist, of Manitoba for his interesting address on "Beekeeping in Manitoba."

Considerable discussion took place on the resolution relating to the time for holding the annual convention, some arguing that it was better to have it at the same time as the Winter Fair in the New Arena in Toronto, and others holding that the fair would detract beekeepers from their own meeting. It was finally decided that the matter of deciding the date be left to the Executive Committee.

The report of the Committee as thus amended, was then adopted.

REPORT OF CROP COMMITTEE.

Light Honey.

The Crop Report Committee of the Ontario Beekeepers' Association met in Toronto on Thursday, July 21st, 1921.

Reports were received from 442 members, together with special reports from forty of the most prominent apiarists in different Counties.

The quality is reported to be much better than 1920, with a good average yield in all parts.

The Committee recommends the following prices F. O. B. shipping point:

Best Quality Light Extracted, wholesale .....15c.-18c. per lb.
" " " " retail (to consumer) .....20c.-25c. "
No. 1 Comb, wholesale .....$2.50-$3.50 per dozen
No. 2 " " ..... 1.75- 2.50 "

The minimum price is recommended for barrels or whole crop, the maximum prices for part crop or 2½, 5 and 10 lb. tins. Honey in glass packages should be somewhat higher to allow for increased cost of package and bottling.

The Committee recognizes that prices of all commodities must be lower and have accordingly reduced the recommended prices considerably with a view to moving out the crop steadily. These prices show a reduction of 10c. per lb. all round, over last year.

Dark Honey.

The Crop Report Committee of the Ontario Beekeepers' Association met in Toronto on Tuesday, September 27th, to consider the Dark Honey Crop Reports. Three hundred and twenty-nine reports were received in time for the Report Committee's meeting.

The total dark honey reported was 395,445 lbs. from 16,817 colonies, or 24 lbs. average.

The Committee recommends the following prices.

Dork Amber or Buckwheat, Extracted, Wholesale, ...9c.-11c. per lb.
Dark Amber or Buckwheat, Extracted, Retail.....12½c.-15c. "

The Committee are of the opinion that the demand for honey should continue to be strong. The reports showed that the light honey has moved freely at the prices recommended by the Association Crop Report Committee.

Members should develop the home market to its fullest capacity and so secure the higher retail prices.

Members would be well advised to see that the colonies are well fed for winter. With dark honey at almost sugar prices it may pay to feed full combs of dark honey rather than extract honey and buy sugar. Two precautions are necessary: (1) Do not transfer honey from colony to colony unless positive no American Foul Brood is present: (2) Unless a good quality of dark honey is available, feed each colony fifteen pounds of sugar syrup for actual wintering after honey has been given to colonies.

Signed by the Committee.

Wm. Couse. W. W. Webster, President.

W. J. Craig F. Eric Millen,

H. G. Sibbald Secretary-Treasurer.

FINAL WHITE HONEY CROP REPORT, 1921.

County	No. Colonies Spring Count	*Pounds White Honey	Average No. Pounds per Colony
Algoma	28	3,800	136
Brant	332	30,700	92
Bruce	1,364	107,235	79
Carleton	702	74,650	106
Dufferin	85	4,800	56
Dundas	330	15,900	48
Durham	373	11,200	30
Elgin	525	37,560	72
Essex	255	24,400	96
Frontenac	246	6,500	22
Glengarry	448	17,700	37
Grenville	59	1,400	24
Grey	621	65,075	105
Haldimand	843	60,300	72
Halton	1,193	137,075	115
Hastings	530	25,750	49
Huron	1,122	85,800	76
Kent	427	31,200	73
Lambton	1,292	111,500	86
Lanark	262	12,900	49
Leeds	310	9,950	32
Lennox	160	2,000	13
Lincoln	286	18,875	66
Manitoulin	47	1,400	30
Middlesex	562	46,830	83
Muskoka	2	300	150
Nipissing	38	1,795	47
Norfolk	242	21,300	88
Northumberland	175	5,300	30
Ontario	109	4,000	37
Oxford	839	59,700	71
Parry Sound	179	22,950	128
Peel	426	49,900	117
Perth	877	75,600	86
Peterboro	138	7,698	56
Prescott	500	50,000	100
Prince Edward	429	9,600	22
Renfrew	444	38,040	86
Russell	234	20,500	88
Simcoe	712	41,150	58
Stormont	104	5,000	48
Victoria	362	14,975	41
Waterloo	340	30,150	89
Welland	281	26,125	93
Wellington	776	60,365	78
Wentworth	228	16,600	73
York	1,332	85,730	64
Totals	21,169	1,591,278	75

*A small percentage of the honey reported is sold in comb honey sections. As a colony managed for comb honey will produce about half as much as one managed for extracted honey, the Committee has multiplied the number of pounds of comb by two before adding in with the extracted.

Mr. Couse reported that the Committee had met as usual and considered everything they generally considered. He pointed out that the Committee had not control of everything. It only gave advice as to what would be fair, and he ventured to think that 80% of the people got the prices.

Mr. Sibbald added that the Committee had had a communication from Owen Sound beekeepers complaining of the time that elapsed between the Committee's meeting and the receipt of the report. He explained that the meeting was held as usual and the report was made as usual, but that Secretary Millen had gone to England and Mr. Hodgetts had acted for him at Toronto, and the report was made out and sent to Guelph to be printed, and considerable time was lost there. It was intended to print the next report in Toronto and mail it from there.

TORONTO EXHIBITION.

Mr. Couse reported regarding the Exhibit at Toronto Exhibition. The Committee had met, and Mr. Temple had agreed to put up the exhibit, and he had conducted the work with great skill and judgment. $300 had been set aside for the expense of the exhibit, a license had been obtained at a cost of $100, and honey had been sold so that the exhibit had involved no expense except the profit on the honey, as he understood.

Mr. Temple reported that the exhibit had cleared itself from sales of honey. The $300 appropriation had not been drawn on, and he had the balance in hand of twenty-six cents. The honey had been bought at sixteen cents delivered at the show, and had been sold at eighteen cents a pound, plus what the glass cost. Every bill had been paid, and everybody was satisfied.

Mr. Bainard reported from London Exhibition that they had had a great many exhibitors and everything was all right.

OUT-APIARY MANAGEMENT, SPRING TO FALL.

Mr. Byers, in the absence of Mr. A. Eric Hutchinson, spoke on this subject. He could not bring out anything new, as the matters had been fully discussed. He believed that the Apiary should be supplied with reasonably strong colonies, and above everything else they should have an abundance of stores and a fair amount of protection,. The main factor of out-door wintering was abundance of good stores. In April they would take a hasty peep into each colony by looking in the back of the hive, for if there was any honey in the hive it would be almost at the rear of the combs. He used quilts for covering, because having a large number of bees they were quicker and more convenient to handle than honey boards. The first thing done in spring, was a thorough examination to find the general condition of the bees, along in May. If Foul Brood was found it was attended to at once. If they found a queenless colony it was marked, as also a very weak colony. The time of the first manipulation depends on locality One of the great mistakes is too-early manipulation of the brood nests. He would say, leave them alone until the spring manipulation, then mark all the colonies by some simple system—they had not time for anything like hive records; that was too complicated. He confessed he was a very poor business man, and would not keep up such a system anyway. Of courses they clipped their queens. The first thing was to find the queen. There were a great many ways of clipping queens. They clipped a great many of theirs without catching them at all. One of the

hard things, but one of the most important, is to decide when to put the first super on. He had seen extra strong colonies get the swarming fever early in May, and an ounce of prevention was worth a pound of cure. He aimed to err on the safe side. If he thought a colony would need a super it was no harm to put it on. He aimed to keep a super ahead, but sometimes they got behind as they did last year in Binbrook, and had considerable difficulty to overcome the swarming impulse. He tried to hold his colonies together as much as possible, and hold down the swarming impulse, adding supers when necessary. The number of supers was a question. This year he had lost honey because the bees got ahead of him. The speaker was brought up to use a big hive, and he still liked to handle them, but he had many colonies wintering in eight-frame Langstroth hives, but they were fed until combs were solid. He advised not to worry about the winter nest, which he thought was one of the greatest absurdities ever talked of. To sum up he would say, have good queens, populous colonies, and feed good stores; in the spring work do not do more than is necessary. One of the grandest ways to amuse yourself in working around the bees. I regret I have not the time I used to have to sit down in front of a hive.

Mr. Fowler asked what percentage of buckwheat honey could be left with a colony for winter stores.

Mr. Byers said that question could not be answered with satisfaction, because at different times in many districts they had had bees go into winter quarters with different kinds of stores, and winter splendidly.

Mr. Fowler said he had over 35% buckwheat in a lot of his hives, and he wondered if he should have changed some of the combs for white honey.

Mr. Krouse thought it made a difference how early the buckwheat came in, and also as to the weather. If it was fairly dry and early, he would not worry if it was all buckwheat. If the flow came in late and they had not a chance to seal it all up, he thought it would make quite a difference.

Mr. Sibbald said that by feeding ten or fifteen pounds of syrup to each colony, if quite a brood is hatched out it would be pretty safe to carry them through the winter. They would not use buckwheat so much until the winter was pretty well on.

Mr. Krouse thought Mr. Sibbald's point was a very good one. A colony has sometimes a lot more than they need, and then he would feed them ten pounds of syrup as late as he could leave it, and let them take it down for their winter's stores—not as late as he could leave it, but late in October.

Mrs. Wisner asked, supposing the feeding was finished by October 4th, was there much fear that there would have been so much brood-rearing in the fall that they would need more feeding considering that the weather had been pretty warm since October 4th?

The President said that personally he did not think there would be much danger if they were fed in a hurry.

The President, in closing the Convention, said it was very gratifying to see so many beekeepers present, and the Convention had been one of the largest and best the beekeepers had ever held.

The Convention was then declared adjourned.

Ontario Department of Agriculture

ANNUAL REPORT

OF THE

LIVE STOCK BRANCH

1921

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO :
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1922

Printed by
THE RYERSON PRESS

To His Honour Henry Cockshutt,

Lieutenant-Governor of the Province of Ontario.

May It Please Your Honour.

I have the honour to present herewith for your consideration the Report of the Live Stock Branch of the Department of Agriculture for 1921.

Respectfully submitted,

Manning W. Doherty,

Minister of Agriculture.

Toronto, 1922.

Ontario Provincial Winter Fair

Following are a number of comparative tables of attendance, gate receipts, and entries for a series of years; also report of executive, and the regular annual statement of receipts and expenditures for the year ending January 31st, 1922:—

ATTENDANCE

	1914	1915	1916	1917	1918	1919	1920	1921
Friday	.....	1,195	4,287	1,794	790	2,932	402	537
Saturday	2,550	3,214					2,410	2,225
Monday	5,827	7,063	7,985	5,330	3,410	5,488	4,890	4,221
Tuesday	11,723	11,629	8,228	8,994	3,115	8,254	7,425	4,989
Wednesday	12,128	12,612	12,470	13,812	3,985	10,789	10,041	9,045
Thursday	5,050	6,915	8,711	8,022	1,329	5,686	4,877	5,670
Total	37,278	42,628	41,681	37,952	12,629	33,149	30,045	26,687
Gate Receipts	$4,219	$4,363	$4,504	$4,959	$2,770	$4,380	$7,984	$6,202

COMPARATIVE STATEMENT OF ENTRIES, 1914-1921

	1914	1915	1916	1917	1918	1919	1920	1921
HORSES:								
Clydesdale	144	171	140	158	211	198	178	181
Shire	6	7	8	5	9	3	2	5
Percheron	35	28	27	32	42	39	23	21
Belgian	.....	.....	.....	.....	.....	5	5	19
Hackney	27	44	22	35	36	21	16	18
Standard-bred	14	33	28	36	24	18	8	12
Thoroughbred	16	12	31	22	18	12	8	10
Pony	14	30	12	20	15	9	12	10
Heavy draft	31	51	34	24	43	37	48	60
	287	376	302	332	398	342	300	336
BEEF CATTLE:								
Shorthorn	44	62	82	74	107	107	104	181
Hereford	13	27	19	43	70	40	72	73
Aberdeen-Angus	6	19	27	27	38	55	37	42
Galloway	8	10	.....	.....	.....	.....	.....	.....
Grade or cross	83	83	67	31	40	56	69	55
Amateur class	40	57	.....	.....	.....	.....	.....	.....
Export steers	9	.....	.....	.....	.....	.....	.....	.....
Inter-county baby beef	.....	.....	.....	3	5	12	11	10
Finished cattle	.....	.....	.....	.....	.....	.....	19	6
	203	258	195	178	260	270	312	367
DAIRY CATTLE:								
Shorthorn	4	6	4	5	7	7	3	6
Ayrshire	17	53	41	36	43	49	27	28
Holstein	27	72	34	39	51	65	31	54
Jersey	13	4	24	19	25	9	13	13
Grade	11	11	11	6	8	4	.....	.....
	72	146	114	105	134	134	74	101

COMPARATIVE STATEMENT OF ENTRIES—*Continued.*

	1914	1915	1916	1917	1918	1919	1920	1921
SHEEP:								
Cotswold	52	62	65	56	68	56	41	53
Lincoln	44	36	25	45	18	31	45	66
Leicesters	38	33	31	35	67	48	40	77
Oxford-Down	52	56	25	59	97	66	36	44
Shropshire	55	61	51	81	66	65	62	67
Southdown	63	50	51	56	81	73	56	97
Dorset Horn	18	26	42	21	45	43	28	41
Hampshire and Suffolk	19	35	28	34	64	56	54	55
Market wethers	.....	.....	.....	.....	.....	.....	96	90
Grade or cross	90	63	71	70	82	98	78	126
	431	422	389	457	588	536	536	716
SHEEP CARCASSES:								
Cotswold	14	14	7	7	8	4	3	7
Lincoln	11	6	4	3	4	1	7	6
Leicesters	6	7	3	4	4	6	5	3
Oxford-Down	12	11	4	6	10	3	5	5
Shropshire	14	13	7	8	7	5	8	7
Southdown	16	9	3	3	9	5	5	8
Dorset Horn	9	6	5	6	7	6	3	5
Hampshire and Suffolk	4	5	4	6	7	7	7	10
Grade or cross	43	11	42	38	40	56	53	70
	129	82	79	81	96	93	96	121
WOOL:	.....	.....	27	21	29	49	40	43
SWINE:								
Yorkshire	62	72	60	57	66	74	84	51
Berkshire	36	60	48	80	85	90	65	91
Tamworth	22	36	24	41	32	28	41	47
Chester White	23	40	30	37	30	33	27	34
Any other breed	8	34	45	15	44	24	47	31
Bacon hogs, pure breed	19	40	24	23	33	43	21	18
Carcasses, pure breed	19	34	24	17	33	38	20	18
Butcher hogs	.....	23	15	11	12	10	16	15
Carcasses, butcher hogs	.....	22	14	11	12	10	14	15
Farmers' Sons', special	.....	6	2	7	4	6	2	3
	250	415	286	299	351	356	337	323
SEED:	337	331	374	252	394	350	291	282
POULTRY:								
Fowls	3,311	4,198	4,092	4,518	4,651	4,976	3,845	4,049
Turkeys and water fowl	378	346	396	462	455	449	367	441
Pigeons	474	558	663	872	913	923	547	671
Pet stock	28	46	18	25	89	49	40	34
Exhibition pen	13	20	31	59	69	78	65	92
Selling class	147	229	82	.....	.....	.....	.....	.....
Dressed poultry	228	185	208	166	136	179	186	277
Laying pens	.....	.....	.....	11	10	12	8	13
	4,579	5,582	5,490	6,113	6,323	6,666	5,058	5,577
JUDGING COMPETITION:								
Regular	250	195	124	145	140	60	198	192
Inter-county teams	.....	54	63	60	63	30	69	66
	250	249	187	205	203	90	267	258

72-HOUR DAIRY TEST, ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1921.

Cat. No.	Prize.	Name and age of Animal	Lbs. Milk	Fat.			Solids, not Fat		Lbs. S. N. F.	Points for S.N.F.	No. Days Milking	Points	Total Points
				%	Lbs.	Points	L.R.	%					
		Shorthorn, 48 Mos. and over											
718	1st	Bonnie Belle	126.8	4.22	5.354	133.860	34.3	9.620	12.199	36.597			170.457
717	2nd	Lily of the Valley	139.6	3.80	5.003	125.088	33.2	9.220	12.861	38.586			163.674
		Ayrshires, 48 Mos. and over											
723	1st	Auchenbainzie Etty	190.8	4.08	7.781	194.525	32.2	9.067	17.300	51.900			246.425
721	2nd	Dairy Queen of Orkney 3rd	156.8	4.24	6.659	166.475	31.6	8.955	14.040	42.114			208.589
724	3rd	Freetrader's Jean Armour	146.9	4.12	6.058	151.900	31.6	8.950	13.152	39.366	31	.1	191.366
725	4th	Lady Betty 2nd	98.7	4.26	4.202	105.050	31.4	8.912	8.797	26.441	34	.4	132.941
		Ayrshires, 36 Mos. and Under 48.											
729	1st	Brookside Style	156.0	4.44	6.931	173.255	32.2	9.171	14.307	42.921			216.176
726	2nd	Edna of Craigielea	188.1	3.12	5.884	147.100	32.1	8.790	16.538	49.614			196.689
730	3rd	Pride 4th	149.0	3.65	5.443	135.075	32.1	8.930	13.317	39.951	84	5.4	181.426
728	4th	Trixy G. 2nd	156.1	3.29	5.142	128.550	33.6	9.220	14.392	43.126	37	.7	172.426
		Ayrshires, Under 36 Months											
732	1st	Craigielea Helen	145.4	4.26	6.202	155.050	33.3	9.381	13.646	40.938			194.988
734	2nd	Rosebank Pride	145.1	3.54	5.148	128.700	32.5	9.023	13.093	39.279	42	1.2	168.099
733	3rd	Craigielea Patty	132.7	3.81	5.063	126.580	32.9	9.220	12.246	36.138	34	.4	163.718
736	4th	Prince's Sarah	83.1	4.40	3.664	91.600	32.8	9.292	7.722	23.166			114.766
		Holsteins, 48 Months and Over											
761	1st	Colantha Mercena Beulah	267.2	3.12	8.330	208.245	30.4	8.403	22.525	67.155	32	.2	275.605
751	2nd	Lady Mercedes Katrina	240.3	3.24	7.814	195.350	32.2	8.866	21.306	63.918			259.268
756	3rd	Mildred Colantha	213.5	3.75	8.016	200.400	31.4	8.779	18.745	56.232			256.635
755	4th	Ourville Della Abberkirk	206.3	3.31	6.832	170.800	31.6	8.760	18.086	54.258	40	1.0	226.056
757	5th	Minnie Vale Calamity	189.9	3.53	6.714	167.850	30.0	8.380	15.930	47.790			215.648
752	6th	Bess Butter Girl	174.7	3.25	5.689	142.225	32.2	8.870	15.497	46.491			188.710

72-HOUR DAIRY TEST, ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1921.

Cat. No.	Prize.	Name and age of Animal	Lbs. Milk	Fat.			Solids, not Fat		Lbs. S. N. F.	Points for S. N. F.	No. Days Milking	Points	Total Points
				%	Lbs.	Points	L.R.	%					
		Holsteins, 36 Mos. and Under 48											
763	1st	Echo Lady Segis	176.8	5.07	8.972	214.300	32.9	9.500	16.795	50.385			274.685
762	2nd	Pontiac Atlas Francy 3rd	234.8	3.58	8.432	210.800	30.8	8.580	20.159	60.478			271.265
768	3rd	Oakhurst Colantha Tensen	239.1	2.96	7.185	179.625	32.2	8.795	21.030	63.090	46	1.6	236.315
765	4th	Lady Norfolk Abberkirk	226.2	3.02	6.841	171.025	28.8	8.059	18.231	54.693			225.718
770	5th	Lady Clothilde Abberkirk	174.3	3.65	6.377	159.425	29.8	8.368	14.586	14.758	33	.3	203.483
769	6th	Meta Mercena Johanna	194.1	2.91	5.663	141.575	28.9	8.010	15.548	46.644			188.219
764	7th	Ourville Susie Fayne	139.2	2.96	4.128	103.200	30.5	8.372	11.655	34.965	62	3.2	138.485
		Holsteins, 24 Mos. and Under 36											
771	1st	Pioneer Gift Hartog	159.0	3.90	6.209	141.455	31.4	8.826	14.034	42.102	39	.9	198.228
779	2nd	Francy Abberkirk Ladoga	148.0	3.97	5.889	147.225	31.5	8.866	13.122	39.366	37	.7	187.291
776	3rd	Sylvia Butter Girl Colantha	152.3	3.66	5.578	139.450	31.5	8.697	13.246	39.738	57	2.7	181.888
772	4th	Belle Pieterj Korndyke 2nd	148.6	3.33	4.915	122.875	31.9	8.780	13.048	39.144			162.019
773	5th	Sunnyside Alcartra Queen	118.2	3.19	3.773	95.325	31.0	8.554	10.112	30.336	33	.3	124.961
		Jerseys, 48 Mos. and Over											
802	1st	Edgley Pretty Maid	109.1	6.35	6.934	173.335	33.2	10.008	10.919	32.757	47	1.7	209.492
803	2nd	Brampton Black Beauty	132.2	5.17	6.843	170.625	33.1	9.552	12.628	37.884			208.959
804	3rd	Brampton Viola	127.2	5.19	6.609	165.225	33.0	9.574	12.179	36.537			201.762
		Jerseys, 36 Mos. and Under 48											
806	2nd	Lassie of Pinehurst	124.8	4.41	5.515	137.875	34.9	9.837	12.278	36.144			174.019
805	3rd	Edgeley Fairy Lady	100.8	5.11	5.161	128.975	33.6	9.675	9.753	29.259	121	9.1	167.424
		Jerseys, Under 36 Months											
809	1st	Brampton Bright Amalia	94.0	6.12	5.753	143.843	33.5	9.879	9.303	27.909	46	1.6	174.952
808	2nd	Edgely Sweet Alice 2nd	105.0	4.01	4.218	105.450	34.5	9.634	10.116	30.348			135.798

Ontario Provincial Winter Fair

REPORT OF THE EXECUTIVE.

In presenting the report of the 38th Provincial Winter Fair, your executive feels that there are many causes for satisfaction in connection with the Fair just passed.

The Fair held December, 1921, was a success in every way, with the possible exception of attendance. The following comparison of entries of 1920 and 1921 shows that we had an increase in entries in all departments, with the exception of swine and seeds, and in the case of seeds there was actually more seed on exhibit in 1921 than in 1920, although the entries were a few less in number:

	1920	1921
Horses	300	336
Beef cattle	312	367
Dairy cattle	74	101
Sheep	632	837
Swine	337	323
Seeds	291	282
Poultry	5,058	5,577

The exhibit of horses was the largest in the history of the Fair, with the exception of 1913. This made it necessary for a considerable number of horses to be stabled throughout the city in whatever stables it was possible to secure. This was inconvenient for some of the exhibitors, but under the circumstances was unavoidable.

In the Beef Cattle and Sheep Departments, the entries were record breakers. It was necessary to crowd cattle into every available corner, as most of you are aware. We were obliged to erect temporary pens for about ninety sheep in the carcass department and leave them there until such time as they were slaughtered.

While there were a few less entries in swine than in the previous year, the numbers were still sufficiently large to occupy every available space.

The entries in seeds were a few less than the previous year, but due to the fact that a class had been added for seeds in commercial quantities, i.e., ten-bushel lots, there was actually more seed on exhibition than in any previous year.

Poultry entries showed an increase of almost 600 over 1920, and were exceeded only by the record entry of 1919.

One of the outstanding departments of this year's Fair, was the exhibit of dressed poultry. Never in the history of the Fair, and so far as we know, at no place in Canada has there ever been such a large entry of dressed poultry, and it is conceded by all who viewed the exhibit that the quality was exceptionally high. The one disappointing feature about it was that the entry was so large that a considerable portion of the exhibits could not be displayed to advantage.

The quality of the exhibits in all departments was exceptionally high, and from the point of view of display we feel that we have cause to congratulate ourselves.

Due to the fact that a general election was held on the Tuesday of the Fair this last year, the attendance was not what might have been expected in normal conditions, and our gate receipts suffered accordingly. Financially, however, the affairs of the Association are in a satisfactory condition. At the time the books were closed for the 1920 Fair, there was a surplus of $764.85, but a number of grants from Live Stock Associations were due and after allowing for all unpaid accounts at the close of the year there was a net surplus of $2,250.00 on account of 1920. While at the close of the 1921 Fair, we only show a balance of $310.84.

there was due grants from associations and other accounts, totalling $2,735.00. After making due allowance for unpaid accounts at the close of the year, we will have, when all the grants and accounts owing us are paid, a surplus of approximately $2,800.00. So it will be seen that our surplus was added to on account of our 1921 Fair, to the extent of $600.00.

An innovation at this year's Fair was the auction sale of beef cattle the last day of the Fair. Arrangements were made to hold this sale early in the summer when it was expected that the Royal Agricultural Winter Fair would be held and the Fat Stock Show at West Toronto cancelled. It is now a matter of history that no Royal Fair was held in 1921 and as a consequence the Fat Stock Show at West Toronto was revived. An effort was made to have the dates of this show arranged so that animals could proceed from Guelph to Toronto, but our efforts to make satisfactory arrangements with the management of the West Toronto Show were unsuccessful. As a consequence animals could not be exhibited at both places. This, no doubt, prevented a number of exhibitors from making entries at Guelph who otherwise would have shown there. As matters turned out, this was probably fortunate, as it would have been practically impossible for the management to have accommodated any more beef cattle than it did. The fact of the West Toronto show being held on the same dates as ours created doubts in the minds of some as to the success which would attend the sale at Guelph. We are happy to report, however, that the total of sixty-one head sold brought satisfactory prices and the exhibitors went away well satisfied with the result of the sale. We believe that it would be well to continue this feature at future Fairs.

The pressing need of the Fair to continue its growth and usefulness, is more space. At the annual meeting last year your executive was authorized to study this question and see if it was not possible to obtain more accommodation. A meeting was arranged with the City Council of Guelph, and the needs of the Fair explained to them carefully and the probable future development outlined. We were received very courteously by the City Council and the matter was promised consideration. Some time later there was submitted to the executive and the Minister of Agriculture a proposition for providing increased space. This consisted of the city providing a site for our building on the south side of the railway tracks. This to be in the form of a new arena with a seating accommodation of 4,000 people and stabling accommodation for about 300 horses. The city offered to erect this building and issue debentures covering same if the Fair or the Department of Agriculture would assume the responsibility for retiring these debentures as they came due. It was not felt that the Department or the Fair could assume the responsibility for the whole cost of the building at that time and as a consequence we were obliged to drop the matter for the time being. It is to be hoped that this matter will not be allowed to remain in abeyance, as we are more urgently in need of additional space than ever. It is hoped that some satisfactory method of securing greater accommodation can be found. It is one of the urgent matters which will face the new executive.

We feel that the Ontario Provincial Winter Fair may look forward to the future with confidence. It has been demonstrated that the producers of live stock, poultry and seed in this Province are willing to support the Fair in increasing numbers, and we feel assured that any efforts which we can make to extend the classification or improve the accommodation will be fully appreciated by the general public. Let us make the 1922 Fair better than ever and the exhibitors will see that it is bigger than ever.

FINANCIAL STATEMENT

Of the Ontario Provincial Winter Fair for the year ending January 31st, 1922.

Receipts.

Cash on hand as per last statement		$764 85
Grants—		
Legislative	$17,000 00	
Dominion Government	5,000 00	
Canadian Clydesdale Breeders' Association, 1920	1,500 00	
Canadian Aberdeen-Angus Association, 1920	250 00	
Ontario Aberdeen-Angus Association, 1920	40 00	
Holstein Friesian Breeders' Association, 1920	695 00	
Canadian Hereford Breeders' Association, Bal. 1920	75 00	
Subvention re seeds, Dominion Government	400 00	
Ontario Berkshire Association	50 00	
Ontario Yorkshire Association	50 00	
Ontario Seed Growers' Association	75 00	
Holstein Friesian Association	725 00	
Shire Horse Association	50 00	
Ontario Poultry Association	75 00	
Ontario Sheep Breeders' Association	500 00	26,485 00
Advertising catalogue	229 30	
Advertising, prize list	1,065 57	1,294 87
Fair concessions		440 50
Gate receipts		6,201 80
Refund of prize money		7 00
Entry fees, 1920		25 00
Refund on lumber		8 10
Refund excise tax		2 55
Refund express charges		12 10
Entry Fees—		
Horses—$688.20, stalls—$236.00	$924 29	
Beef cattle	774 87	
Dairy cattle	199 30	
Sheep	621 54	
Swine	340 20	
Poultry	4,428 37	
Dressed poultry	235 57	
Seed	202 90	
Judging	160 65	
Wool	36 00	
Nurse cow	93 00	8,016 69
Sales—		
Seeds 1920	$171 70	
Seeds 1921	561 30	733 00
Milk		170 65
Bags		11 55
Carcasses		3,781 92
Cattle		6,649 35
Dressed poultry 1920	$592 71	
Dressed poultry 1921	$2,634 40	3,227 11
Catalogues		182 67
Ensilage		16 20 14,772 45
Collections and Fees, returned cheques		53 37
		$58,084 28

Expenditures.

Printing		$2,828 10
Advertising		2,140 38
Prize Money—		
Horses	$4,540 00	
Beef cattle	4,110 00	
Dairy cattle	1,922 00	
Sheep	3,569 00	
Swine	2,248 00	
Seeds	1,228 00	
Judging	465 00	
Poultry	4,895 27	
Poultry, dressed	846 00	23,823 27

Special Prizes		
Herefords	$ 25 00	
Aberdeen-Angus	85 00	
Holstein Friesian	250 00	
Bright special	25 00	
Keith special	10 00	
Special poultry	1 00	$396 00
Special prize, Aberdeen-Angus, 1920		95 00
Prizes, 1919—$225.00, 1920—$70.00		295 00
Judges' services and expenses 4		1,600 00
Judges' clerks, poultry $118.28, Livestock $146.00		264 28
Election returns		41 43
Directors' Luncheons		222 45
Help—		
Office	$810 83	
Live Stock	912 25	
Poultry	996 30	
Seed	82 00	
Dairy test	220 10	
Carcass competition	356 28	
Arena management and stabling	340 00	
General	910 60	4,628 36
Commission for advertising, catalogue and prize list		196 00
Telegraph and Telephone		53 32
Cup bases		34 55
Poultry cup		18 00
Taxes		13 91
Poultry feed		164 03
Ensilage		25 10
Engraving medals and cups		39 50
Light and heat		1,232 69
Directors' services and expenses		1,851 09
Sales		
Cattle	$6,649 35	
Poultry	2,634 36	
Carcasses	3,781 94	
Seeds	573 30	
Milk	170 65	13,809 60
Badges and prize ribbons		757 82
Fitting building		687 49
Memberships—		
Ontario Poultry Association	507 00	
Ontario Seed Growers' Association	64 00	571 00
Bedding—		
Shavings	$191 17	
Straw	365 46	
Freight	19 25	575 88
Decorating		194 94
Rent of stables		191 50
Orchestra		150 00
Travelling expenses and board office staff		145 75
Insurance		141 90
Press Bureau		95 00
Supplies for arena—tan bark $35.52, Cartage $50.00		85 52
Refund of freight charges		77 57
Supplies for Seed Department		69 22
Exchange and tax on cheques		53 65
Office supplies		35 60
Express charges		30 21
Sundries		28 10
Adjustments		28 06
Auditor		15 00
Refund stall fees		2 00
Refund entry fees		5 50
Collections and fees returned cheques		53 37
Interest on overdraft		6 30
Cash on hand		310 84
		$58,084 28

JOHN GARDHOUSE, *President*,
J. E. RETTIE, *Treasurer*.

Stallion Enrolment

SUMMARY OF BREEDS OF STALLIONS ENROLLED IN THE PROVINCE FOR THE YEARS 1913-1921.

(Report of enrolment by Counties will be found in the Stallion Enrolment Report.)

Year	Clydesdale	Percheron	Shire	Belgian Draft	French Canadian	Suffolk	Standard Breds	Thoroughbred	Hackney	French Coach	German Coach	Ponies, Morgan and Hunter	Grades	Total Number Horses Enrolled	Percentage of Grades
1913.....	1,179	236	69	17	1	...	156	31	59	7	6	6	993	2,760	36
1914.....	1,313	308	73	21	4	...	232	43	72	5	7	5	1,118	3,201	34½
1915.....	1,331	328	70	22	4	...	257	46	77	7	6	7	1,022	3,177	32
1916.....	1,125	320	47	15	5	4	270	36	63	7	7	6	826	2,731	30
1917.....	1,038	299	42	19	4	3	280	31	60	6	7	4	640	2,433	26
1918.....	885	262	33	11	7	3	248	25	49	3	5	4	458	1,993	23
1919.....	976	326	32	21	6	3	286	19	47	2	6	5	.....	1,729	0
1920.....	930	353	32	22	11	4	240	16	36	2	8	5	.....	1,659	0
1921.....	845	347	23	26	9	2	200	14	34	1	7	3	.....	1,511	0

Co-Operative Car Shipments

CO-OPERATIVE SHIPMENTS OF LIVE STOCK

Below is given the shipments for the years 1908 to 1921 inclusive, and that for 1921 in detail:—

NUMBER IN EACH SHIPMENT

Year	Horses	Cattle	Sheep	Swine	Total
1908.....	22	74	14	15	125
1909.....	25	70	84	4	183
1910.....	39	51	36	7	133
1911.....	58	51	51	18	178
1912.....	51	45	24	20	140
1913.....	47	71	107	21	246
1914.....	49	97	34	20	200
1915.....	28	104	76	8	216
1916.....	59	185	100	22	366
1917.....	70	269	196	15	550
1918.....	67	250	180	4	501
1919.....	24	154	154	4	336
1920.....	18	110	37	6	171
1921.....	1	37	19	5	62

DETAILS OF CO-OPERATIVE SHIPMENTS, FOR 1921

Stock	Feb.	May	Oct.	Total	
Horses:—					
Clydesdales	1	.....	.....	1	1
Cattle:—					
Shorthorn	2	8	3	13	
Angus	4	1	5	10	
Holstein	3	4	5	12	
Ayrshire	.....	1	.....	1	
Jersey	.....	1	.....	1	37
Sheep:—					
Cheviot	11	.....	.....	11	
Suffolk	.....	.....	2	2	
Southdown	6	.....	.....	6	19
Swine:—					
Berkshire	1	.....	.....	1	
Yorkshire	1	2	.....	3	
Tamworth	1	.....	.....	1	5
	30	17	15		62
No. of Cars	1	1	1		3

Incorporated Poultry Associations

Name of Association.	*Secretary.*
Aurora Poultry Association	John B. Spurr, Aurora.
Aylmer Poultry Association	Fred D. King, Aylmer.
Beamsville Poultry Association	J. A. Sinclair, Beamsville.
Barrie Poultry Association	A. Hutchinson, Barrie.
Belleville Poultry Association	A. S. Large, Belleville.
Border Cities Poultry Association	J. A. Shrum, Windsor.
Bradford and W. Gwillimbury Poultry Association	O. M. Seim, Bradford.
Brampton and Peel County Poultry Association	E. Gregory, Brampton.
Brantford and Brant County Poultry Association	A. A. Freeborn, Brantford.
Brockville Poultry Association	G. Hall, Brockville.
Caledonia Poultry Association	H. H. Berscht, Caledonia.
Chatham Poultry Association	A. H. Black, Chatham.
Collingwood Poultry Association	John T. Shultz, Collingwood.
Dufferin County Poultry Association	H. A. Dorrance, Orangeville.
Dundas and N. Wentworth Poultry Association	Geo. H. Kennaugh, Dundas.
Dunnville and Haldimand Poultry Association	M. C. Kaufman, Dunnville.
East York Poultry Association	S. Foster, East Toronto.
Elgin Poultry Association	John Farley, St. Thomas.
Fort Frances Poultry Association	Wm. Bartley, Fort Frances.
Galt Poultry Association	L. Hinrich, Galt.
Gananoque Poultry Association	E. H. Hurd, Gananoque.
Guelph Poultry Association	Thos. Simpson, Guelph.
Hamilton and Wentworth Poultry Association	R. Yates, Mt. Hamilton.
Hanover Poultry Association	Oscar H. Becker, Hanover.
Huron County Poultry Association	Geo. P. Gould, Goderich.
Ingersoll and South Oxford Poultry Association	E. H. Albrough, Ingersoll.
Kenora Poultry Association	R. Veitch, Kenora.
Kimberley Poultry Association	R. W. Lawrence, Kimberley.
Kingston Poultry Association	Wm. J. Arneil, Kingston.
Kitchener Poultry Association	J. Gordon Steiss, Kitchener.
Lambton County Poultry Association	W. R. McDonald, Petrolia.
Leamington and Essex County Poultry Association	E. Walling, Leamington.
Lindsay Poultry Association	E. Beadle, Lindsay.
Listowel Poultry Association	A. S. Inkley, Listowel.
London Poultry Association	H. Layng, London.
Mitchell and Perth County Poultry Association	Cephas Woodger, Mitchell.
Milton Poultry Association	N. A. Sinclair, Milton.

Napanee Poultry Association	E. W. Metcalf, Napanee.
New Ontario Poultry Association	E. H. Roskelly, Sault Ste Marie.
Nickel Belt Poultry Association	D. J. Robicheau, Sudbury.
Norfolk Poultry Association	W. S. McColl, Simcoe.
North Bay Poultry Association	W. C. Brimley, North Bay.
Northern Ontario Poultry Association	H. E. Tuck, Fort William.
North Lanark Poultry Association	H. A. Robinson, Almonte.
North Wellington Poultry Association	J. A. Farrell, Arthur.
North York Poultry Association	G. A. Morning, Newmarket.
Northumberland and Durham Poultry Association	J. H. Magill, Port Hope.
Oakville Poultry Association	B. Galley, Oakville.
Oakwood Poultry Association	Walter A. Scott, Toronto.
Ottawa Poultry Association	Walter A. Rush, Ottawa.
Owen Sound Poultry Association	C. Vanwyck, Owen Sound.
Palmerston Poultry Association	W. W. Love, Palmerston.
Paris Poultry Association	Geo. Leishman, Paris.
Peterboro Poultry Association	W. J. C. Nesbitt, Peterboro.
Powassan Poultry Association	Approved 1917, no show held.
Power City Poultry Association	D. M. Allen, Niagara Falls.
Prince Edward County Poultry Association	George R. Moore, Picton.
Progressive Poultry Association	F. Hickling, Wallaceburg.
Renfrew Poultry Association	M. H. Winter, Renfrew.
Russell County Poultry Association	R. M. Warner, Russell.
Riverdale Poultry Association	G. Chrysler, Toronto.
Sarnia Poultry Association	G. W. Stephenson, Sarnia.
Smith's Falls Poultry Association	John Drummond, Smith's Falls.
South Bruce Poultry Association	Harvey H. Damm, Walkerton.
St. Catharines Poultry Association	J. M. Cameron, St. Catharines.
Stratford Poultry Association	John E. Bowling, Stratford.
Tavistock Poultry Association	S. Zehr, Tavistock.
Temiskaming Poultry Association	Levi Soper, Englehart.
Tillsonburg Poultry Association	Wm. Cadman, Tillsonburg.
Toronto Poultry Association	H. H. Dowton, Toronto.
Waterloo Poultry Association	Dalton Cressman, Waterloo.
West Elgin Poultry Association	C. C. Robinson, West Lorne.
Waterdown Poultry Association	Wm. H. Reid, Waterdown.
Wiarton Poultry Association	O. S. Smith, Wiarton.
Woodstock Poultry Association	Chas. J. Andrews, Woodstock.

Ontario Horse Breeders' Association

The Annual Meeting of this Association was held in Toronto, February 16th, 1922.

OFFICERS.

President	JOHN A. BOAG, Queensville.
Vice-President	JOHN GARDHOUSE, Weston.
Secretary-Treasurer	J. E. RETTIE, Toronto.
Executive Committee	T. H. HASSARD, Markham; WM. GRAHAM, Claremont; W. G. HILL, Queensville; C. W. GURNEY, Paris; W. L. MOSSIP, St. Marys; W. SCOTT, Sutton West; GEORGE PEPPER, Toronto; PETER CHRISTIE, Manchester.

DIRECTORS

Canadian Clydesdale Association.

WM. SMITH, Columbus. W. L. MOSSIP, St. Mary's. W. SCOTT, Sutton West.
PETER CHRISTIE, Manchester. WM. GRAHAM, Claremont. J. M. MCCALLUM, Shakespeare.
JAS. TORRANCE, Markham. JOHN MOORE, Queensville. ROBT. GRAHAM, Toronto.
T. H. HASSARD, Markham. F. RICHARDSON, Columbus. J. GOULD, Uxbridge.
JOHN MOORE, Queensville.

Canadian Shire Association.

JOHN GARDHOUSE, Weston. AMOS AGAR, Nashville.

Canadian Percheron Association.

E. C. H. Tisdale, Beaverton. W. G. Hill, Queensville.

Canadian Belgian Draught Association

C. W. Gurney, *Paris.* Geo. Crouch, London.

Canadian Standard-bred Association

O. B. Shepherd, Toronto. Geo. Pepper, Toronto.

Canadian Thoroughbred Association.

J. J. Dixon, Toronto. Col. Wm. Hendrie, Hamilton.

Canadian Pony Society.

Dr. W. J. R. Fowler, Toronto. J. M. Gardhouse, Weston.

Canadian Hackney Association.

Percy Boag, Queensville. H. A. Mason, Scarboro.

Representatives to Fair Boards.

Canadian National Exhibition:—John A. Boag, Queensville.

Western Fair, London:—Wm. Mossip, St. Mary's; George Charlton, Duncrief.

Central Canada Exhibition:—Wm. Smith, Columbus; Adam Scharf, Cummings' Bridge.

Ottawa Winter Fair:—Adam Scharf, Cummings' Bridge; Wm. Smith, Columbus; T. Fairbairn, Billings' Bridge; T. C. Bate, Ottawa.

Ontario Provincial Winter Fair:—John A. Boag, Queensville; Peter Christie, Manchester; T. H. Hassard, Markham; T. G. Patterson, Agincourt.

Royal Agricultural Winter Fair:—John A. Boag, Queensville; Wm. Graham, Claremont; Peter Christie, Manchester.

Eastern Canada Live Stock Union:—Wm. Smith, Columbus; John A. Boag, Queensville; W. L. Scott, Sutton West.

FINANCIAL STATEMENT

Of the Ontario Horse Breeders' Association, for the year ending December 31st, 1921.

Receipts

Cash on hand as per last report	$380 87
Unclaimed cheques	16 00
Legislative grant	500 00
	$896 87

Expenditures.

Directors' expenses	$170 70
Printing notices of annual meeting	7 66
Hotel Carls-Rite, rental of room	10 00
Auditor	3 00
Reporting annual meeting	20 00
Floral wreaths	31 50
Cash on hand	654 01
	$896 87

John A. Boag,
President.

J. E. Rettie,
Treasurer.

Canadian Swine Breeders' Association

ANNUAL MEETING

The Annual Meeting of the Canadian Swine Breeders' Association was held in the Carls-Rite Hotel, Toronto, at 8 p.m., on Monday, February 13, 1922.

The President, W. H. English, was in the chair.

OFFICERS

President ..... M. Ste Marie, St. Anne de la Pocatiere, P.Q.
Vice-President ..... J. E. Brethour, Burford, Ont.
Secretary-Treasurer ..... J. E. Rettie, Toronto.
Executive Committee ..... M. Ste. Marie, St. Anne de la Pocatiere, P.Q.
J. E. Brethour, Burford.
J. E. Rettie, Toronto.
P. J. McEwan, Wyoming.
W. H. English, Harding, Manitoba.

Directors.

Wm. Gilbert, Stoney Plain, Alta.
W. H. Higginson, Sardis, B.C.
W. H. English, Harding, Man.
J. F. Roach, Sussex, N.B.
J. E. Brethour, Burford, Ont.
G. A. Dewar, Wyoming, Ont.
P. J. McEwen, Wyoming, Ont.
Frank Byrne, Charlesbourg, Que.
M. Ste. Marie, St. Anne de la Pocatiere, P.Q.
Phillip Leech, Baring, Sask.

Record Board.

M. Ste. Marie, St. Anne de la Pocatiere, P.Q.
J. E. Brethour, Burford, Ont.
J. E. Rettie, Toronto.
P. J. McEwen, Wyoming, Ont.
W. H. English, Harding, Man.
G. A. Dewar, Wyoming, Ont.
Phillip Leech, Baring, Sask.

Representatives Eastern Canada Live Stock Union:—J. E. Brethour, Burford; M. Ste. Marie, St. Anne; F. L. Fuller, Truro, N.S.

Representatives Western Canada Live Stock Union:—W. H. English, Harding, Man.

Representatives Royal Agricultural Winter Fair:—Wm. Jones, Mt. Elgin; P. J. McEwen, Wyoming; M. Ste. Marie, St. Anne de la Pocatiere, P.Q.

Representatives Central Canada Exhibition:—W. McCullough, Ottawa; A. A. McMillan, Ottawa.

REPORT OF THE DIRECTORS

The number of registrations for the different breeders of swine during several years past is as follows:—

	1914	1915	1916	1917	1918	1919	1920	1921
Yorkshires	4,831	3,147	3,975	3,889	5,362	5,578	4,759	4,173
Berkshires	5,024	2,535	3,820	3,431	3,801	3,722	2,669	2,831
Chester Whites	1,610	1,555	1,629	1,583	1,905	1,877	1,594	1,439
Tamworths	854	675	942	742	748	727	485	676
Poland Chinas	710	595	946	824	784	1,009	733	721
Duroc Jerseys	1,348	1,337	2,312	2,102	2,512	2,325	2,096	2,309
Hampshires	200	117	168	130	179	258	211	338
Large Black							43	62
	14,577	9,961	13,792	12,701	15,291	15,496	12,590	12,549

Following is a statement of registrations by Provinces:—

Provinces	Registrations 1920	Registrations 1921	Transfers	Duplicates and new Certificates
Ontario	4,359	4,126	3,190	17
Manitoba	1,253	1,022	857	1
Saskatchewan	1,837	1,755	1,397	7
Alberta	1,914	2,423	1,864	6
British Columbia	318	434	319	
Quebec	2,637	2,301	1,745	14
New Brunswick	293	258	213	3
Nova Scotia	152	126	80	
Prince Edward Island	117	70	40	
United States		4		
	12,880	12,519	9,705	48

The amounts credited in the Monthly Statement from the Record Office are as follows:—

January	$1,847 05
February	1,635 90
March	1,552 25
April	1,349 65
May	1,396 45
June	2,070 15
July	2,030 35
August	2,108 15
September	1,075 85
October	1,253 85
November	1,771 00
December	1,826 85
	$19,917 50
Interest	119 15
	$20,036 65

January 1st to December 31st, 1921

FINANCIAL STATEMENT FOR CONDUCTING THE SWINE RECORD, 1921

RECEIPTS

Received from the Association to pay salaries, 1921	$5,400 00
From Record Committee Fund	2,944 06
Balance owing to Record Committee	254 52
	$8,598 58

EXPENDITURES

Salaries to December 31st, 1921	$8,430 76
Refunds	167 82
	$8,598 58

J. W. BRANT, *Accountant.*

The number of members of the Swine Breeders' Association in 1919, 1920 and 1921 is as follows:—

	1919	1920	1921
Ontario	451	378	402
Manitoba	202	195	177
Saskatchewan	315	293	301
Alberta	242	225	264
British Columbia	53	59	66
Quebec	357	338	348
Maritime Provinces	56	62	56
	1,676	1,550	1,614

Review for 1921

It will be noted by the Report that the registrations for 1921 were slightly less than in 1920. The falling off, however, is so slight, compared with the falling off in business in other Live Stock Associations, that we may feel very well satisfied with the year's business. The year, from the beginning, was a trying one for those engaged in the swine industry. In the early part of the year they were faced with falling prices, and as no one knew how far prices would fall, there was hesitation on the part of the farmer to increase his stock of swine. In fact the majority of them were inclined to reduce their breeding stock. This was reflected in the comparatively light demand for what the breeder had to sell.

The finances of the Association have improved considerably over those of 1919. It should be pointed out, however, that this increase is more apparent than real. Owing to the printers' strike during the summer of 1921 no printing of the Swine Record was done. We are, therefore, in arrears with our printing, practically to the extent of a whole volume. As the estimated cost of this volume is $7,000, it would very materially reduce the balance of cash on hand. While we will no doubt be able to treat the Provincial Associations more liberally with respect to grants, it can readily be seen that it will not be best for us to make any very large grants to these Associations.

At the time of the last annual meeting your directors appointed an Educational Committee to consider ways and means whereby this Association could assist in furthering the swine industry. This Committee held several meetings, and finally, in co-operation with the Provincial and Dominion Departments of Agriculture and the Industrial and Development Council of Canadian Meat Packers, planned and conducted six educational courses at different packing plants throughout the Province. The programme of these courses was: First, to impress upon those taking the course the kind of product desired. For this purpose various grades of cured Wiltshire sides were secured, and it was demonstrated to the classes the desirable and undesirable features of the different specimens. Sides from freshly-killed animals were then used to demonstrate to the class what sort of raw material the desirable Wiltshire side could be manufactured from. A demonstration was then given with selected classes of live hogs, pointing out to the class the conformation required to produce the desired quality of bacon. In all, 288 junior farmers took advantage of these courses, and it is believed that this will have a very far-reaching influence upon the class of swine raised in the future in the Province of Ontario. Plans are under consideration to extend the benefit of courses such as these to the other Provinces of the Dominion.

In November, 1921, the Live Stock Commissioner for the Dominion called a conference to consider the problem facing the production of swine in Canada. There were representatives of the packers, of the producers, and of the different Departments of Agriculture. This conference recommended to the Minister of Agriculture that all hogs sold in public stock yards, or consigned to abattoirs, be sold and paid for upon a basis of grades; as it was believed that to insure the highest quality of hog being produced it would be necessary to assure the man who produced that hog that he would receive proper return for having produced a high quality product. The packers present at the conference pledged themselves to pay at least ten per cent. more for the select bacon hog than for the hog which graded thick-smooth. The following are the grades which were decided upon:—

SELECT BACON HOGS—Jowl and shoulder light and smooth; back from neck to tail, evenly fleshed; side, long medium depth, dropping straight from back, ham full, good general finish, no excess fat. Weight 160-210 pounds.

THICK-SMOOTH HOGS—Not conforming to Wiltshire standard, but of smooth fleshing and finish. Weight 160-210 pounds.

HEAVIES—Any type of smooth fleshing and finish. Weight 210-260 pounds.

EXTRA HEAVIES—Any type of smooth fleshing and finish. Weight over 260 pounds.

SHOP HOGS—Any type of smooth conformation. Finished. Weight, 120-160 pounds.

LIGHTS AND FEEDERS—Any type of smooth conformation. Unfinished. Weight 160 pounds and under.

ROUGHS—Of rough conformation; any weight.

SOWS—All females that have raised one or more litters:

No. 1—Sows of smooth finish and smooth underline up to 350 pounds.

No. 2—All other sows.

STAGS—Hogs that have been castrated and are well healed before being offered for sale.

It is felt that, while there will be a great deal of hard work and many difficulties to overcome in having this system thoroughly worked out, once this is done it will have a very beneficial effect upon the quality of hogs produced in Canada.

It is hoped that the Department of Agriculture, in its efforts to work out this scheme, will receive the fullest co-operation from all breeders.

FINANCIAL STATEMENT

RECEIPTS.

Cash on hand as per last report	$ 3,782 32
Registrations	16,167 50
Memberships	3,750 00
Interest on deposits	119 15
	$23,818 97

EXPENDITURES

Directors' expenses	$ 2,289 75
Printing records and notices, etc.	2,154 74
Grants:—	
Ontario Swine Breeders' Association	189 00
Quebec Swine Breeders' Association	169 00
Maritime Stock Breeders' Association	31 00
Record Office salaries, 1921	5,400 00
Balance due Record Board, 1920	931 38
Auditor	5 00
Reporter at annual meeting	14 50
Office expenses	18 00
Cash on hand	12,616 60
	$23,818 97

Examined and found correct this 26th day of January, 1922.

W. H. ENGLISH, *President.* J. E. RETTIE, *Secretary.*

DISCUSSION

J. E. RETTIE, Secretary: It was realized at the last annual meeting that the swine industry in Canada was in a rather precarious condition. After a discussion an Educational Committee was appointed, consisting of all the Directors, and they called in several officials of the Department of Agriculture and also Mr. Todd of the Packers' Association, and a number of educational courses were decided upon, to be tried out the first year in Ontario. In December six courses were held at different packing plants in the Province of Ontario, the Dominion Department of Agriculture, the Provincial Department, the Packers' Association and the Breeders' Association co-operating. The programme outlined in the review for 1921 in the report of the Directors was well carried out. In all, 288 young men took advantage of those courses, and these men pretty thoroughly understand what is required to be produced in the way of hogs in order to get our share of trade in the English market. In many parts of Ontario the request was made for similar courses in connection with the ordinary short courses that had been given, and as there are thirty-seven points in Ontario where courses are being held during this winter, arrangements were made with the packers to supply a number of Wiltshire sides and also freshly-killed carcasses which could be cut up and thus a thorough demonstration given to students. This would bring the instructions to 4,000 or 5,000 young men and boys in Ontario, and at some courses large numbers of older men attended. At one point there was an attendance of ninety in the afternoon of men of quite mature age. It was hoped that such courses would be started in other Provinces this year. It has been taken up in Quebec and in good shape to go on in the spring. An effort had been made for improvement in the marketing of hogs on a proper basis so as to give producers of the best quality of bacon hog, proper payment

for bringing out that kind. As pointed out in the Directors' report, arrangements have been made for the establishment of official grades of hogs. These grades are to be found in the report.

W. H. English, President: I feel that good work has been done during the past year. The war interfered seriously with the work and with the kind of hogs produced. Knowing that there was a constant demand in England for a certain class of bacon known as "Wiltshire sides" it was felt that something should be done at once to supply it, as there were valuable areas in both Eastern and Western Canada. After Mr. Todd's address last year, representative breeders, packers and agricultural officials were called together, and it was felt that something must be done at once. There was no market for the fat hog across the water, and though they were not lowering his standard at all, it was decided to put the bacon hog in the place where it belonged, as there was a market in England for millions of pounds. We felt that the way to do this was to put a premium upon the bacon hog. Western Canada is progressive in education, particularly in consolidated schools, and the policy agreed on was presented through the Department of Agriculture to all the consolidated schools and school clubs, with the result that fourteen cars of hogs were at Winnipeg on exhibition, and the Dominion Department gave $100 as first prizes, going down to fifty dollars and twenty-five dollars, and the boys and girls in Manitoba had taken up the campaign, and had over thirty working clubs, and the seventy-two Agricultural Societies there had just held a convention and they are going into this campaign, as they considered it the greatest opportunity ever presented to the hog men of Western Canada who are interested in high-class material. The time has arrived when breeders of swine and sheep must get down to class and quality in breeding what there is a market for, and the animals must be brought to just the right weight and point of perfection. The packer would then be able to manufacture these into high-class bacon in competition with Sweden, Denmark or any other country.

Mr. Gould asked the relation of this association to the administration of grading hogs for market.

Pres. English said it was in the hands of the Dominion Department of Agriculture, and he asked Mr. Arkell to explain.

Mr. Arkell, Live Stock Commissioner: The conference that had been held, after working out the plans on which the whole policy would be carried forward, had defined definite grades which had been agreed upon, and in making those grades effective the Department had been asked to undertake the grading. The discussion throughout the conference was in the hands of the meeting, which included representatives of the swine breeders' organizations in Canada, Provincial and federal, the Provincial Departments of Agriculture, the Canadian packers belonging to the Association and those independent, the Canadian Live Stock Exchange, the Canadian Council of Agriculture, and two or three co-operative organizations in different parts of the country. The Department asked that the policy be worked out, and it was at the request of the conference that the Department should undertake actual work of grading. He paid a tribute to the work of representatives of the Swine Breeders' Association from Eastern and Western Canada, of Secretary Rettie and others, as well as to delegates from Provincial organizations. The understanding arrived at was that while the Department was to undertake the work of administration of the policy, they were at all times to have the counsel and advice of the Breeders' Association. We are now at work on the plan of grading, but the regulations have not yet been put

through Order-in-Council, as it was thought best not to present a definite recommendation until we were able to discuss the whole plan with those with whom we would have to carry on. The officers of the Department have been in consultation with stock yards managers in regard to removing difficulties in the way of carrying on the work, so that yardage accommodation would be provided for the actual work of grading. Members of live stock exchanges have also been consulted as to how the work of grading at the yards can best be carried on without interfering with their business. We have also consulted packers of both classes mentioned as to how grading could be done at their plants. From these different sources full information has been gathered, and we hope shortly to define in a regulation the method that will be followed. Before the work of grading can be undertaken it is planned to make a statement, in addition to the definition of grades, explaining exactly how the plan is to be followed, and that statement will be widely distributed throughout the country so that farmers, breeders and others will know exactly how the work is to be carried forward.

Hon. Manning Doherty was called upon to speak, and said in part: "Swine breeding is of tremendous importance not only to the different Provinces but to the Dominion. Agriculture all over the continent is experiencing a crisis unlike anything known to the memory of the oldest man present, but it must strike everyone who has considered the matter widely that those Provinces which have developed diversified farming were the parts of the continent that were coming through the crisis best. In Washington recently, after listening for three days to reports of men from various States, I was struck with the very great insurance that was given to all the various branches of an industry such as agriculture—by diversified forms of farming that had been adopted. The record of registrations in the Breeders' Association for the past eight years spoke well for the faith which breeders had in the swine industry. As for paying for hogs somewhat in ratio as to what various hogs would bring in their finished state, I believe that the fundamental principles underlying the proposed scheme are absolutely right. I have felt for many years, especially during the war, that it was almost impossible to talk quality to a breeder, to induce him to produce animals of quality, when he could sell anything at a price almost equal to the best; but they must all realize that that period has passed, and Canada now has to compete with other countries engaged in raising hogs, and the only way to make any appreciable progress is to adopt a system of paying by quality. This is true not only of hogs but of all branches of agricultural development. I do not see any objection to the fundamental priciples of the policy. I cannot believe that the only reason for difference in price between bacon from Canada and from Denmark on the British market, is in the hog; and if so, the hog raisers of this country must change their methods and produce the right kind of hogs. It has struck me as rather peculiar, not being interested in the production of hogs for so many years, that it should be found out now, after years of shipping bacon to the British market, that the quality of Canadian hogs alone is responsible for the variation in price. I feel that a percentage of bacon which went to the British markets from Canada was equal to that from any other country.

While in the old country I spent a couple of days examining sides reaching some big importers there from Denmark, Ireland and Canada, and it would be hard for anyone to convince me that there was not a very considerable percentage of Canadian bacon quite equal in quality to that which came from those

other countries. There is no doubt, however, that the reputation of Canadian bacon in Great Britain has suffered in the last four or five years. I was very much astounded when this was first brought to my attention, because I could not believe it to be true, but after discussing it with several there I heard the same story, and there was no denying it. I think the method outlined by Mr. Arkell would appeal to all as being workable, and our Department as well as myself personally are absolutely behind that proposition. The grading should be necessarily in the hands of Government officials. I believe no person would agree to anything else. There are many points which will have to be safeguarded, and no doubt it will be impossible to safeguard every point before the plan is put in operation, but as the work proceeds these can be taken care of. Canada can ill afford to let the reputation of her bacon suffer, and steps must be taken to see that the reputation for Canada's exportable agricultural products is not jeopardized, but rather safeguarded. I can assure you that the Province of Ontario will do everything possible to assist, and will co-operate with the Federal Department as has been done in the educational courses outlined by the secretary.

Mr. Arkell: I understand that Canadian bacon has graded about fifth place in comparison with other bacon that is being or had been sold on the British market, and that that place or grade is more or less consistent with the history of Canadian trade as against Danish; the difference in value being about twenty shillings per hundred weight as between the two, having regard to the average quality of bacon sold for the English trade. The difference is admittedly due to the fact that Canada is not getting a sufficient number of select bacon hogs for the market to enable Canadian packers to forward the quality of bacon that would compare with Danish or Irish bacon. Canada must frankly face that fact. After having travelled over Western Canada for the last month or six weeks, and having some knowledge of what was taking place in Ontario and Quebec, I know that the Provinces throughout Canada, and the country as a whole, are standing behind the growing policy adopted in a remarkable way. The breeders, the farmers and growers of pigs throughout Canada are endeavoring to inform themselves as to exactly what is required, and there is an acceptance of the principle that they must grow the bacon type of pig if they are going to compete or hold their place or secure a proper place in the export market. There is general unanimity of opinion that the policy that is being worked out is the right one for Canada, and it is being recognized that all must endeavour to qualify for this particular business, even against the prejudice or views of those who have been accustomed to breed other types of hogs. I wish to compliment Manitoba on the way in which it has committed itself to a particular type of pig. The work of the boys' and girls' clubs there has spread throughout the Province, and old breeders have taken the opportunity to secure high-class blood in order that they might be able to supply the hundreds of boys and girls with seed stock next spring. In all, some twenty-six clubs have been organized, and at a point near the Saskatchewan border two boys alone have agreed to contribute a carload of hogs in the competition. The Provincial Department there had committed itself to that policy and I can confirm what President English has said in that direction. Even in Alberta, where it has been the habit to breed the heavier type of hog, there is a distinct turn towards breeding a hog that will qualify for the bacon trade. Even in the Counties of Essex and Kent, in Ontario, some breeders of the thick, fat hogs are quietly disposing of their animals and preparing themselves to breed seed stock for distribution purposes. I would like to

refer briefly to two resolutions passed the other day in Quebec. One was that no other sale would be held after the present date, of any Chester White boars: they are confining themselves to the bacon type. Another resolution, which was remarkable for the Province, provided for the general Stock Breeders' Association to start the breeding of the bacon type of pigs. Such action will support the adoption of the general policy all over Canada, and I think it speaks well for the breeders. I would like to warn those here that we are not yet out of the woods. I look for the marketing next fall of a rather large number of hogs throughout the country, but the price can not be guaranteed. The country is looking for the breeding of hogs to pay its debts, as a method of making its living, which means that breeders must face the matter steadily and quietly, knowing that they will have their ups and downs, but every effort is being made between the Federal Department, Provincial Departments and the stock breeders' organizations to keep the country informed of all that is taking place in the British market—what it would pay, what it would absorb—and also the prices paid for live hogs here. I believe there is a determination on the part of all interested in those places to play the game fairly. I believe they are prepared to follow a steady policy, and that the whole country is ready to face their ups and downs and meet and overcome difficulties, so as to build safely and profitably for the future. I believe the breeders and others have given the Dominion Department a big job in asking them to carry the grading principle into effect. It is clear that mistakes will be made, for it is not possible to inaugurate a new system without interfering somewhat with business in some way; but counting on the co-operation of the various interests and fair and constructive criticism of all parties, and willingness to find out, I am confident it will be relatively easy to carry the scheme to a success, as there is a general agreement that the policy is the right one. There is confidence throughout the country that the basis of work agreed on is right in principle and more or less right in method, that the future offers something worth while and that we can build on that system. It is now a matter of detail, of method, quietly working it out step by step, and I have no fear that the Department will overcome all difficulties and develop a programme that will meet the situation and carry it through to success.

Mr. Barber asked how the premium was going to get back to the farmer if the grading was done at the packing plant.

Mr. English: We have a co-operative system in Manitoba. At every point the hogs are marked with different colours, and those marks stay there till they reach the packer. In Manitoba the grain has been graded for years, and growers have to trust somebody till the grain goes to the place where it is graded. I think there is no better place than at the abattoir to have the animals judged and graded. I saw a lot of fifty Wiltshires selected at one abattoir, and there was only one pound difference in the whole fifty hogs in weight. When that kind of hog is produced and put on the market, it will not take long to educate every man as to the type of bacon hog. Manitoba boys not more than twelve years old can pick a bacon hog and say what it will weigh and what it will bring.

RECORD OF PERFORMANCES

J. E. Brethour, Burford.

There has been some discussion in regard to establishing a Record of Performance for animals of desirable type. I do not thing the Denmark plan would work in Ontario as well as Denmark, as co-operation does not exist here as in that country. I would suggest that a breeder wishing to have animals qualify for the Record of Performance class should be requested to list the boar and sow with the Swine Committee at the time they are bred, and after the sow farrows the pigs could be inspected, the whole litter, and each of them ear-tagged, the sow and boar also being ear-tagged for identification. Of course, all these animals would be of pure breed. This would make a correct identification of the litter. The pigs should remain the property of the owner and breeder until they are ready to market. A number would be selected to make a reasonable test—four were used in Denmark—to give the better average for the litter. These would then be sent to a packing house, graded and scored alive according to a certain standard, so much being allowed for weight, for age, say twenty-five per cent.; for type and formation, say sixty per cent.; for finish, say fifteen per cent. They should also be marked and scored as carcasses, on lines similar to those used in Denmark for length, thickness of back fat, and those various standards necessary to produce the final standard. The principal matter is to get control of the progeny of a given sire and dam. I believe that in this way a sow could get a useful and reliable record of performance: the boar would probably require to have a record from five or six different sows so as to give an average. The idea in favour of this plan instead of that of Denmark is that the pigs from a litter are sent to a central station in Denmark and there fed and cared for, and all the different conditions taken into account. The danger is that where a lot of pigs are brought together in this way there are great risks from various diseases, and if breeders consigned their pigs to a central point for testing, there would be a risk of a great many troubles, such as lung trouble, being spread, whereas, if left with the breeders, they would be brought along under ordinary farm conditions. According to this plan the value of various sows and boars could be proved, and credit could be given according to the scale which would be agreed upon. I am strongly in sympathy with the system of listing. When they are listed the correct control of the breeder is established at once, and there can be no substitution and no irregularity in the testing of the pigs.

E. S. Archibald: I think there is a real need for something being done in connection with the idea of a record of performance. Suppose two classes and conditions of Yorkshires are being registered, and there is no evidence from the registration paper as to the quality of either the sire or the dam, that registration paper may be more of a curse to the owner, the producer, of the breed itself than a benefit. The time has come for more rigid selection of breeding stock, followed by some sort of propaganda which will inspire producers, especially young men, with the knowledge that they are getting quality according to a correct standard which will answer the requirements of the bacon trade. The record of performance for sows might be worked out on either plan. I see no great difficulty in collecting them at central points. If the plan worked in Denmark, where they are not pneumonia free or worm free, it might work in this country, which is fairly free of hog cholera, and where other infectious diseases are almost nil. It is true that Canada has a lot of worms, and it is time breeders learned to con-

trol them, which will in turn control ninety-nine per cent. of the pneumonia. I do not see any very great difficulty there. The record of performance must not be confined alone to the family lines, that is the sow lines. On the experimental farm system we have 300 or 400 brood sows, as good as we were able to breed, and the greatest difficulty constantly is in regard to boars. I say this with all due respect to the men who represent the best boar breeders in Canada. That being the case, we should not stress the record of performance of sows any more than of boars. I believe that the record of performance would be valuable if it were properly carried out with regard to recording sires and sows prepotent in ability not only to produce numbers of offspring, but, above all, quality of offspring which in turn would be prepotent. If the system of record of performance will do that, it should be taken up as quickly as possible. It will have to be thought out pretty carefully, and probably preliminary steps taken for a year or two in trying out possible systems, but every pure-bred-hog breeder in Canada should be interested in the matter. I believe the solution of the problem of boar supply is not to be found by going to England or the United States or some other country, and buying boars, even if they are of the type the market demands. They are of family lines so far removed from our own that the radical cross which would occur by using them would disappoint the breeder ninety times out of a hundred. I believe that breeders who have used imported boars will bear me out in that respect, that they got more disappointments than they did from any other supply of boars, and a radical cross is a bad thing. The trouble is not that our blood lines have run out. It is the rigid selection that is wrong; and if the record of performance would facilitate their selection and retain boars, as well as sows, of blood lines not too far removed from those the breeders had in their own herds, I believe the breeders will get on constructive lines. I believe we have all the blood lines of the female lines in Yorkshires or any other breed that are needed in Canada: and if an intelligent selection of each breeder with a recognized standard in view were adopted and checked up with a record of performance, the breeders would know where they could get a boar not too far removed in blood lines and of the type they were working with, and they would know where to look, to secure the animal they want. I wish to assure the Canadian breeders that the Superintendents of the Experimental Farms and the Director of the Dominion Experimental Farm System, of whom there are nineteen not present, are right behind any scheme which would improve the systematic constructive breeding of hogs of the desired character, and if there is anything they can do to assist any record of performance system they would gladly do it. Mr. Rothwell, the Dominion Animal Husbandman, has shown beyond a doubt, in the last year or so more particularly, that he can take the best of blood lines of strictly bacon-type hogs, and without overfeeding, that is, without making them overweight, he can change the type produced altogether. They would not be graded as heavy, but they would be graded as correct-weight fat hogs: and with other methods of feeding he believes they could make prime bacon hogs which would be entitled to receive the ten per cent. premium. Methods of feeding, as well as types of feed used, are just as important as the breed. The matter calls for careful study not only by breeders but by those in charge of the various experimental farms and by breeders' associations as well.

Ontario Swine Breeders' Association

The annual meeting of this Association was held in Toronto, February 14th, 1922.

OFFICERS

President ..... Cecil Stobbs, Wheatley.
Vice-President ..... W. F. Wright, Glanworth.
Secretary-Treasurer ..... J. E. Rettie, Toronto.
Executive Committee ..... Cecil Stobbs, Wheatley; W. F. Wright, Glanworth; J. E. Rettie, Toronto; Wm. Jones, Mt. Elgin; W. W. Brownridge, Georgetown.

Directors

Yorkshires

Russell Templar, Burford.
A. Leitch, A.O.C., Guelph.
Wm. Jones, No. 4, Mt. Elgin.
J. K. Featherstone, Streetsville.

Berkshires

H. A. Dolson, No. 1. Cheltenham.
W. W. Brownridge, Georgetown.

Tamworths

George Douglas, Mitchell.

Chester Whites

W. F. Wright, Glanworth.

Duroc Jerseys

Cecil Stobbs. Wheatley.

Poland Chinas and Hampshires

George Gould. Essex.

Representatives to Fair Boards

Canadian National Exhibition:—H. A. Dolson, Cheltenham.
Western Fair, London:—W. F. Wright, Glanworth; Geo. Douglas, Mitchell.
Ottawa Winter Fair:—T. Graham, Ottawa; J. W. Brant, Ottawa; G. Rothwell Ottawa; J. C. Stuart, Osgoode.
Ontario Provincial Winter Fair:—J. D. Brien, Ridgetown; P. J. McEwen, Wyoming; J. M. Duck, Port Credit; W. F. Wright, Glanworth.
Royal Agricultural Winter Fair:—Cecil Stobbs, Wheatley; H. A. Dolson, Cheltenham; W. F. Wright, Glanworth.
Eastern Canada Live Stock Union:—Cecil Stobbs, Wheatley.

FINANCIAL STATEMENT

Of the Ontario Swine Breeders' Association for the year ending December 31st, 1921.

Receipts

Cash on hand as per last report	$ 9 86
Ontario Large Yorkshire Swine Breeders, Refund Grant	31 50
Ontario Berkshire Swine Breeders, refund grant	19 00
Grant—Canadian Swine Breeders' Association	189 00
	$249 86

Expenditures

Directors' and Representatives to Fair Boards, expenses	$176 85
Hotel Carls-Rite, rental of room	10 00
Auditor	3 00
Reporting annual meeting	14 00
Cash on hand	46 01
	$249 86

Cecil Stobbs,
President.

J. E. Rettie.
Treasurer.

The Ontario Cattle Breeders' Association

The annual meeting of this Association was held in the Hotel Carls-Rite, Toronto, on Friday, February 17th, 1922, at 2 p.m.

OFFICERS

President ..... John Gardhouse, Weston.
Vice-President ..... W. E. Thomson, Woodstock.
Secretary-Treasurer ..... R. W. Wade, Toronto.

Executive Committee

John Gardhouse, Weston. R. W. Wade, Toronto.
W. E. Thomson, Woodstock. D. O. Bull, Brampton.
John McKee, Norwich.

Directors

Jersey

D. O. Bull, Brampton. H. A. Dolson, Cheltenham No. 1,

Ayrshire

John McKee, Norwich. W. W. Ballantyne, Stratford No. 3.
H. C. Hamill, Markham.

Hereford

L. O. Clifford, Oshawa. H. D. Smith, Ancaster.

Aberdeen-Angus

James Bowman, Guelph. G. C. Channon, Oakwood.

Holstein

Jas. R. Anderson, Mountain View. T. A. Spratt, Billings' Bridge.
W. E. Thomson, Woodstock, No. 7. Fred W. Lee, Springford.
R. S. Stevenson, Ancaster. W. P. Allison, Chesterville.
G. A. McCullough, Navan. W. R. Cummings, Cummings' Bridge.
A. E. Hulet, Norwich.

Shorthorn

F. W. Scott, Highgate. John Gardhouse, Weston.
James Douglas, Caledonia. Wm. Waldie, Stratford.
W. A. Wallace, Kars. A. G. Farrow, Oakville.
W. A. Dryden, Brooklin. Geo. Gier, Waldemar.
R. R. Wheaton, Thorndale.

Representatives to Fair Boards

Canadian National Exhibition: John Gardhouse, Weston.

Central Canada Exhibition: W. C. Cummings, Ottawa

Ontario Provincial Winter Fair: John Lowe, Elora (Beef); John Gardhouse, Weston (Beef); John McKee, Norwich (Dairy); R. S. Stevenson, Ancaster (Dairy).

Ottawa Winter Fair: Dr. J. H. Grisdale, Ottawa (Beef); R. G. T. Hitchman, Ottawa (Beef); W. C. Cummings, Ottawa (Dairy); A. R. Dawson, Ottawa (Dairy).

Royal Agricultural Winter Fair: John Gardhouse, Weston; D. O. Bull, Brampton; W. E. Thomson, Woodstock.

Western Fair, London: J. D. Brien, Ridgetown; W. W. Ballantyne, Stratford.

Eastern Canada Live Stock Union: John Gardhouse, Weston.

FINANCIAL STATEMENT

of the Ontario Cattle Breeders' Association for the year ending December 31st, 1921.

Receipts

Cash on hand as per last report	$ 767 57
Orangeville Exchange, sale of bulls $315; freight, feed, etc., $156.83	471 83
Advance postage	50 00
Refund, Advertising, Dominion Department	80 00
Sale of bull, W. H. Brown	165 00
Refund, slides, gate signs, advertising, etc.	216 32
	$1,750 72

EXPENDITURES

Directors' expenses	$ 181 60
Expenses, re annual meeting	34 65
Reporting annual meeting	17 15
Eastern Canada Live Stock Union membership fee	25 00
Auditor	5 00
Freight, feed, miscellaneous expenses, Usborne Tp. campaign	120 35
Refund sale of Cattle, Sudbury Calf Club	35 00
Grant, Ottawa bull sale	125 00
Purchase of stock, Haldimand County Club	100 00
Inspection of Cattle for sales	72 85
Advertising, O.P.W.F. prize list, and Huron County	92 57
Painting gate signs	62 65
Camera repairs and supplies	17 98
Slides, slide cases, screens, lamps, etc.	122 05
Car expenses, fieldman	106 30
Care of bull, exhibit Guelph	1 50
Exchange, photograph, subscription to Gazette	8 85
Cash on hand	622 22
	$1,750 72

JOHN GARDHOUSE,
President.

R. W. WADE,
Treasurer.

PRESIDENT'S ADDRESS

JOHN GARDHOUSE, WESTON.

I am very pleased to welcome all who are interested in good cattle to the Cattle Breeders' Association, and to note the interest that has been taken in the different livestock meetings during the week, and at the different exhibitions during the last year, and also the interest taken in the sales. There was a sale of Shorthorn cattle yesterday, and I think it is somewhat encouraging to know that even our Ontario breeders are realizing the importance of the right kind of good foundation stock, as these cattle were all sold, I believe, to Ontario breeders. It is encouraging for some of us who have for many years worked towards this end to see the brightening of conditions.

One of the difficulties we have in this country is that we have not enough of the right type of animals. And after we have bred the animals and raised them, we want a market for them, and it is somewhat difficult to know just how to get the market, and the best way to reach it because the embargo for the time being at least, is not going to be raised in the Old Country, and the high tariff wall that we have against the cattle across the line will debar us there. The United States, of course, is our natural market, but that high tariff is a great handicap, though there has been a goodly number of cattle cross the line; the duty has been paid on them, and there is a little margin left over.

One thing the Cattle Breeders' Association has been closely connected with is the formation and assistance to calf clubs. The Association has been ever ready to assist calf clubs in the buying or selecting of the animals, in the paying of freight, or in any other way required, so as to place the right kind of calves in the hands of the boys and girls who are members of these clubs. They have been doing considerable in inspecting pure-bred animals offered for sale. A number of sales have been held where the animals offered were no credit to the breed and should not have been offered at all. If a man from the outside goes to inspect those animals he could easily and readily cull them without causing any feeling to the

owners in the county where the sale is being held. The Cattle Breeders' Association have been interested in that work and they have done a good deal with it. They have also assisted in procuring speakers for any meeting of farmers where livestock topics were to be discussed. Whenever they got in touch with Mr. Wade they always received the assistance they wanted; he was always on the job, and if he could not go himself he secured someone else.

The directors of the Cattle Breeders' Association feel they should be live men, and a stimulus to the improvement of live stock in their own locality and in their own county as far as possible.

He closed by complimenting the secretary upon the thoroughness of his work for the Association.

REPORT OF THE HEREFORD BREEDERS

Mr. Herbert D. Smith: As far as the Hereford business in the Province of Ontario is concerned, during the past year, I am glad to say, it has been one of the best years, if not the best year, we have ever had. As an index of the activities in the business I might say that the transfers of registered stock in this province is over ninety per cent. of the registrations which, comparatively speaking, is by far the highest I have seen in any province as far as our breed is concerned.

A month or two ago there seemed to be a dullness in the bull market, but I am glad to say, from the reports I have had within the last two or three weeks, the men who had a number of bulls to dispose of have pretty well cleaned up their last crop, so we feel the Hereford situation is now in a very good shape and we have a great deal to be thankful for.

H. A. Dolson, Peel County: We selected one township for a better bull campaign, but it is only three-quarters finished. Up to the present we have twenty bulls exchanged. They were mostly Holsteins and Shorthorns, but the big difficulty has been to get a really good bull to replace the scrub.

HOLSTEIN BREEDERS

W. E. Thompson: In connection with our organization in Oxford county we were a little reluctant to take this matter up, but a few of us undertook, upon our own responsibility, to call two representative men from the different breeds of cattle from each township, making twenty-two men in all. We called them together and laid our plans before them and asked their opinion in the matter. The unanimous opinion was that we should take this matter up and see what we could do as far as our county was concerned. We then started our organization going.

In order that there might be definite information as to the number of grade bulls in the county, their breed and where they were required, it was decided at one of our first meetings to have the assessors in the different townships make a complete bull census of the whole county. The two directors from each township were asked to wait on the councils, put the proposition before them, and ask their co-operation to the extent of making the necessary financial arrangements with the assessors to have this work done. Thanks to the assessors and the township councils their work was done well, with the exception of two townships, one of which was later completed by Mr. Trueman during the summer months. We found from the census that there were 1,174 pure-bred bulls owned in the county. In addition to this 693 herds used these pure-bred bulls. There were 296 bulls

in the county last year for registration and 212 more herds on which these bulls were used. There were 559 grade owners and 219 more herds on which these grades were used. This information also gave the post-office address, lot and concession of each man and the breed of bull he owned, whether pure-bred or grade. With this information to work on, the organization settled down to a definite plan of action for eliminating the grade bulls. The first plan decided on with the view of getting the campaign away to a good start, was to ask the breeders to contribute a pure-bred bull in even exchange for a grade. The first bulls offered on this free exchange basis were offered by the executive of this organization. Their action was backed up by the Oxford Holstein Breeders, who, at their annual meeting, offered twenty-seven more bulls on the free exchange basis. The second plan adopted by the organization was to hold a number of meetings in the county, one in practically every township, for the purpose of making known the object of this association, and a plan of action decided upon at this meeting. The use of better bulls was discussed by prominent livestock men, and pictures were shown by way of further demonstration. At these meetings we asked for further contributions of bulls on the free-exchange plan. We also offered bulls in exchange for grades, and as a result, at the close of the meeting sixty-four bulls were offered and about fifteen applied for. Immediately after the meeting the campaign rested during the summer months except for the census of East Zorro township, which was completed by Mr. Trueman.

In September a list of all the pure-bred bulls offered, together with a letter explaining our programme was sent out to every grade owner in the county, offering bulls on the free exchange basis, and as a result of this letter, applications for seventy-five bulls were received.

During the first week of October, Mr. MacKenzie of the Livestock Branch, Ottawa, came to the county to inspect all the pure-breds offered, and all the grades to be taken in exchange. As a result of Mr. MacKenzie's work, fifty-one grades were shipped out and forty-seven pure-breds taken in their place. There still remain two more grades to be shipped and two more pure-breds to replace them as soon as they are old enough. In addition to these exchanges eighteen pure-bred bulls were purchased with the assistance of Mr. Stock and Mr. MacKenzie.

As a result of the activities of this organization approximately seventy-one pure-bred bulls have replaced as many grades. Furthermore, the organization is aware of the fact that indirectly a number of pure-bred bulls have been purchased by the grade owners on their own initiative. Parallel with this work of replacing the grade bulls with pure-breds, this organization undertook at the beginning of last year to organize pure-bred heifer clubs, whereby the boys and girls of the county would be given assistance in the purchasing of pure-bred heifers in order that they may have the basis of a pure-bred herd. At the close of the series of meetings we had applications from seventy-five boys and girls for pure-bred stock. The Merchants' Bank had offered to loan the boys and girls the necessary money for the purchase, on their own notes. During the months of March and April, twenty-seven heifers were purchased for the boys and girls in Oxford county. By the time these were purchased the financial conditions affecting the cattle trade and the milk production were beginning to change and the committee thought it would be best to postpone further purchase of these heifers until conditions became normal.

I might say in regard to our heifer clubs we still have applications on our file for these heifers, but you all know the condition of the markets and the livestock

industry at the present time, and we do not think it would be good business on our part to offer any encouragement to continue this work until conditions have righted themselves.

In regard to continuing the work of better bulls in our county, we have adopted a new plan for this incoming year, which is something after this fashion: The grade owner to contribute fifty per cent. of the value of the pure-bred animal which he is getting. That, in reality, puts it on more of a buying proposition, and they are given assistance from this Association in the selection of the animal, regardless of the breed that they want. We laid our proposition before the annual meeting of the Holstein Breeders' Club in our county, and they heartily endorsed everything we were undertaking. To show their appreciation of what we had done they offered to contribute twenty-six more bulls towards this work; there were a few who, last year, did not have the bulls to make the exchange with. They assured us they were willing to go on and make exchanges on the free-exchange basis as well as to raise another bull for our new plan.

AYRSHIRE BREEDERS

W. W. Ballantyne, Perth County: Through the agricultural section of the Chamber of Commerce of Perth County in Stratford, we have taken up a number of questions concerning agriculture, and this better-bull campaign is one of them. We have been a little envious of the work that has been accomplished in the county next to us, and we feel we ought to be going ahead ourselves. An organization has been formed in our county, and we are tackling the work in one township. We did not feel like going at the whole county at once. We are just simply starting, and really nothing has been done, except the organization has been formed, and we are going ahead in that one township.

W. A. Wallace, Carleton County: I am very pleased to be at this meeting to-day, and to be able to report that Carleton County is getting into line in connection with this bull campaign. We held a meeting in Ottawa with our representatives from the different sections of the county, and organized a county committee. We also picked out one township in one end of the county in which to start the work, which happens to be my own township, and part of the work was laid on my shoulders. We have got the work nicely started, though we have not made any exchanges yet. We have taken a census of the bulls in that township and have been making arrangements with the assessors to take a census in the adjoining township, and eventually throughout the county. In most cases the township council and the assessors are willing to help in this movement. We made a personal canvass of our own township in order that we might get the work under way at once as the assessment work is just about starting. We find in this one township the percentage is about fifty-fifty between pure-breds and grades: then again the pure-breds are divided about fifty-fifty between the Shorthorns and the Holsteins, and the grades pretty much along the same line. I am pleased to be able to say we do not find very much opposition with the people of that section; they are going to fall into line. We have only held one meeting, at which we had lantern slides and local speakers, and we are arranging for a second meeting which I think will be better attended.

I feel sure that in the near future a number of inferior bulls will be sent to the market and pure-bred bulls will replace them. We found some men with

high-grade bulls, yet I think when it comes down to the point of exchanging that we will have no difficulty in persuading them to do so, but our aim at the present time is to get the very inferior bulls out of the way first, and then induce the others later on.

We are ready to co-operate with the Department and I am satisfied that the Department will back us up in anything we may do.

H. A. Dorrance, Agricultural Representative, County of Dufferin: The work that has been carried on in Dufferin has been undertaken from a little different standpoint than what has been attempted in any place in the Province. If my memory serves me correctly, I believe that we have now on every farm where there are a number of pure-bred animals, a reasonably good bull at the head of each of these herds. That plan was carried out because we found that these owners were supplying a good many of the bulls that were being used in the various communities; and it occurred to me that if we were going to get the greatest results we would have to do something with the herds from which these bulls were being sold.

We have placed in our county during the year, through our recommendations and assistance, what I believe to be one of the best Angus bulls in Western Ontario. We secured a Shorthorn bull that was the first prize senior calf of a year ago, and just a few days ago we secured the second-prize junior calf at Toronto Exhibition last fall, and we also secured the Shorthorn bull that was the second prize aged bull of a year ago.

We have possibly reached the stage in our campaign where it is somewhat difficult to carry on for the reason that the kind of bulls that we have been handling cost a reasonable amount of money, and with conditions as we have them the farmers do not seem to be prepared to pay the price to get the kind of bull that I like to handle. At the present time I have been trying to decide what our move will be next.

In co-operation with the Dominion Live Stock Branch we have operated a bull exchange or bull stable at Orangeville during the greater part of the year, and we have found that to be very satisfactory, because, while possibly we are not selling very many bulls yet, the very fact that the bulls are there keeps this proposition before the public, and we are having visitors and inquiries all the time with reference to what we have.

No definite organization has been formed in the county—I have been possibly carrying the bulk of this work myself. A great difficulty is to secure new members that would like bulls of the proper type. Maybe, as some of the men tell me, I am a crank on the kind of bull I want to buy, but I have my own ideas and whether they are right or wrong, I like to carry them out as far as I can, and that is the situation in which we find things at the present time. We find on every occasion when a fresh bunch of bulls come into the barn that the best are taken quickly and that there is little quibbling about the price. We find the men are ready to pay possibly more money for a bull than they had intended when they left home, when they look over the bulls there. That is one way in which possibly we have been able to sell a little better bull than we might have under other circumstances. This is a slow and long job but we intend to keep pegging away. I believe the secret of the whole thing is in having a high ideal of the kind of stock we want.

Mr. Bowman: How do you get the supply of bulls?

Mr. Dorrance: We scour the country and look for them.

Q.—What price are you paying for bulls?

A.—Last spring bulls ran from $140 to $250, for those that went into the barn. It would appear to me we will have to pay around $125 or $150 for the kind of bull I want to have.

G. R. Green, Agricultural Representative, Oxford County: I would feel that I had missed an opportunity if I did not express to you, gentlemen, the appreciation of the Oxford people for the assistance that has been rendered by Mr. Wade and the Ontario Cattle Breeders in helping along the campaign in our county. It is certainly not a one-man job; it needs all the co-operation that can be obtained from as many organizations as possible, to put across this better-bull proposition.

In Oxford county last year, we got along better than we ever had any idea we would, because we began to talk about better bulls. After working away for a year, and after putting on an educational campaign of fourteen meetings, at which we had the best livestock men we could get, it seems to me we have broken down the prejudice that existed around the county that we were trying to do something we had no business to do. Naturally some of these men thought they had the right to keep whatever kind of stock they liked. By following up our educational campaign with an offer to trade a pure-bred registered bull, six months old, for the kind of critter they had on their farms, they began to see the thing in a little different light, and it seemed almost too good to be true. When we began to distribute these bulls, we had more applications than bulls in less than a month. As a result of our year's work, we have distributed seventy pure-breds in even trade for animals that were a disgrace, as the Hon. Mr. Doherty said, to any part of the Province, to say nothing about the county of Oxford.

The bulls we have placed are good ones. They were all inspected by Mr. Mackenzie of the Dominion Live Stock Branch, and those of you who know him know that he would not pass any but the first class. We have had to turn down seven.

Although we have been greatly assisted by the Ontario Cattle Breeders who have financed our meetings, and by the Dominion Government in lending us the help of Mr. MacKenzie and Mr. Stock, yet the bulk of our expense has been born by the breeders who have contributed these pure-breds in exchange for the grades. The owners will not receive more than twenty-five dollars on an average for the bulls they have put in, but they realize they are working on a good business proposition. This year we are offering good bulls at around fifty dollars in exchange for the grades, and I am satisfied we will place 100 bulls. We intend to make that a special feature of our work this year, and I will be very much disappointed if we cannot make at least that many exchanges. We have approximately 600 grade bulls in the county yet, and when you figure that a grade bull is not kept in a herd more than two or three years, it simply means some time in the next year 200 of these bulls will be changed, and if they are ready for our proposition and we have a pure-bred ready to make that exchange, we can put across a lot of them.

E. H. Stonehouse, President of the National Dairy Council, said: I have listened with a very great deal of interest to what has been discussed, and the thing that has appealed to me is that you men have been very unselfish in a great many of your actions, but I hope that you have felt that you have been doing a national service. That has been the keynote in all of these livestock meetings, as far as I have come in touch with them. I like the chairman's idea that the Province of

Ontario is possibly the ground from which the seed is obtained to sow broadcast throughout this Dominion. I like our Oxford friends and their attitude, except in one thing: they have been very energetic in getting rid of their scrub bulls, and they have been equally energetic in getting rid of their scrub cows, or low-testing cows; but in getting rid of these scrubs, whether bulls or cows, it should be seen that they reach the proper destination, and that is the stockyards, so that they will be finally disposed of, and we know they are definitely out of our way for all time to come.

I am, of course, interested in the dairy end of the game to a very large extent, and while I realize the importance of all the breeds in this country of ours, I am particularly interested in the dairy breeds, and in the dissemination of the male animals of these breeds throughout the Province of Ontario. To-day, more than ever before, the prosperity of our dairy industry goes right back to the good old cow upon the farm and her capabilities in regard to production of milk, and of the progeny which is going to be raised, and which will give us better progeny as the days go by.

As an Ontario Association and as a National Dairy Council, generally, we are undertaking in the Province of Ontario, the education of our people as to the value of dairy products, and we are meeting, Sir, with wonderful success. We are going to sweep this Province and teach the people the value of dairy products, and when we get through with that job, then possibly we will turn around and lend some assistance in teaching the people to eat beef.

But this is the point we want to emphasize, that after all, the propositions we are facing to-day are ones that are going to need us all, and all working together. We have felt as dairymen that what co-operation meant to us was co-operating among ourselves, and that is true to a very large extent, but in our great big industries, the livestock industries, there are a good many questions we must join together in solving: we must stand shoulder to shoulder in the battles we have to fight if we are going to dispose of the many questions that are a menace to our great livestock industry to-day. I speak of the transportation difficulties: I speak of controlling of the diseases of our livestock and many other things that are of vital importance. We have just been playing with these things up to the present time, and we have got to get right down to business if we are going to accomplish what will be for our best interest in the years that are to come.

S. E. Todd, Secretary Industrial and Development Council of Canadian Meat Packers: There have been a few things in regard to some of the statistics of the last two or three years that are of interest. The number of cattle that have been marketed in Canada during the last couple of years has been steadily reducing. In 1919 there were 945,817 cattle and calves slaughtered in the packing plants in Canada. In 1920, there were 831,000, of which 573,000 were cattle, and 258,000 were calves. In 1921, there were 497,000 cattle, and 217,000 calves, making about 615,000. So that between 1919 and 1921, there was a decrease from 945,000 to 615,000, and that in spite of the fact that during the year 1920 there were 515,000 cattle exported, and in 1921, 297,000 cattle exported.

If you go back to the census of 1911 and compare that with the census of 1921, you will find a very considerable increase in the total number of cattle in the country. Part of this has taken place in the dairy industry; but during the years 1918, 1919 and 1920, it is evident there was a very big liquidation of cattle, and there was a considerably greater number of cattle in the country in 1919 and

1920 than there was at the time the census was taken in 1921. That means that some of the danger which came through the imposition of the duty in the United States was averted by this liquidation. It also indicates, so far as we can see, that the cattle industry has perhaps seen the bottom. It is pretty hard to say, of course, whether that is true or not, but it looks as though that were the case.

Then there is another factor that has been rather noticeable this fall. During the period when the grass cattle usually come on the markets, in the fall of the year, it was expected that the market would be flooded. There was a great deal of concern felt by the packers at their meetings during the summer previous, that there would be a tremendous quantity of cattle on the market in the fall, and they thought they would be faced with the necessity of taking that beef in considerable quantities—beef perhaps of very poor finish and in bad shape—and putting that into their coolers and probably freezing it and holding it over. The Dominion Department of Agriculture and the packers, so far as they were able, issued very strong warnings in connection with that, and I think the Dominion Department was able to help considerably in making arrangements so that cattle would be held. The result was that cattle were not thrown on the market last fall to the extent that was anticipated. The packers were able to handle the beef as it came forward fairly satisfactorily, so far as storage is concerned, and not a great deal of beef was forced to go into storage. The quantity of frozen beef and storage beef is, I think, considerably below what it has been in some of the years past.

These are some of the facts of the situation that may be a little more encouraging from the standpoint of the producer for the future, than some of the other phases of the work. But they are facts which undoubtedly have a bearing and are of great importance to the breeder of pure-bred livestock.

During last year I have had the pleasure of serving on the committee of the Live Stock Improvement Association, and of co-operating in such ways as I could in connection with the bettering of the breeds of stock in the country, and I have been studying the question as much as I could. There are one or two things that have impressed me very forcibly in connection with the cattle situation: At first you have the improvement of the breeds of cattle from the beef standpoint, and to the extent that that is carried on, it undoubtedly is doing great work for the beef business of the country. On the other hand, there is being effected an equal improvement in the breeds of the dairy cattle, and this brings up a phase of the situation which is, I think, of great importance to the beef question. I have sometimes thought the solution of the quality of the beef that comes on the market might lie not so much in the beef cattle as in the dairy cattle. The thing that loads the beef market, in the stockyards and wherever beef is sold, depresses its price, lowers the demand for its consumption, and generally retards the advancement of the beef industry more than anything else is that great quantity of poor stuff that is coming on the market and which is being sold as beef. According to the classification of the Department of Agriculture, I believe that as much as forty-eight per cent. of the total receipts of the year 1918 or 1919 was common stuff, and only three per cent. of the total receipts was first-class beef, that is, steers of good quality of between 1,200 and 1,400 pounds. So the problem we are dealing with is that very poor quality of beef. If you go out to the stockyards and look around, you will see that that very largely consists of dairy blood; to a certain extent, there are cattle of the beef breeds of poor quality, but a great deal of this inferior production is of dairy blood. As you improve the quality of the dairy breeds in the country, you will necessarily decrease even the beef quality they

have, and the beef quality of their progeny. Everyone rightly and properly should be working for the improvement of the dairy breeds, but it has appealed to me that we have a real problem in knowing what to do with the dairy calf that comes on the meat market. The quantity of calves that come on the market in the year are a very considerable factor in the total supply of meat in this country. There were in 1920, 258,000 calves slaughtered, and in 1921 nearly 218,000 calves slaughtered. The total production of beef was about 325,000,000 pounds in the packing plants, exclusive of the smaller butchers. There were 33,000,000 pounds of veal produced in that time—about nine per cent. of the total meat production in the packing plants was veal. If we are going to be able to take care of the salvage of the dairy calf, it is going to be necessary to have a consuming market for veal, which means a demand from the consumer will have to be built up for that meat. At the present time it is quite difficult to build up the right kind of demand for veal, because the quality of the veal that comes on the market, to a very great extent, does not recommend itself for consumption. The Dominion Department of Agriculture has done all it can towards seeing that veal is of the quality it should be. The regulations require that calves must be three weeks old before they are put on the market, and the inspection within the packing plants ensures that the quality of the veal put there is good, but the effect of these regulations has been that that veal, instead of being shipped either to the stock-yards or the packing plants, is to a very great extent killed locally or shipped into the cities and killed by the small butchers, so that the quality of the veal is not what it should be.

I am saying this to you because here is a problem with which you are going to be faced in the future perhaps more acutely than in the past. It is a phase of the question which we have to face, and if we are going to be able to build up the proper markets for veal, it is, I believe, going to be necessary to protect that market in such a way that you will know the proper quality of veal is put on the market, so that it may build up a strong demand on the part of the consumers.

ADDRESS

DR. GRISDALE, DEPUTY-MINISTER OF AGRICULTURE, OTTAWA.

I have listened, Mr. President, with the keenest attention and the greatest interest to the discussion which has been going on this afternoon in connection with the campaign for better bulls. It seems to me this is one of the best moves that has ever been undertaken in connection with the livestock situation in any country, and more particularly in Canada. When it was conceived some two or three years ago, I was at the first meetings, and was very hopeful indeed of what the results might be. The results have been exceedingly good, possibly not quite as good as I should liked to have seen, but the more one studies the situation and studies the campaign the more is one impressed by the difficulties that confront us in this effort to change the character of the breeding stock in this country. That it is required is self-evident to anyone who is at all familiar with the situation, and who has any opportunity at all to see what is the character of the cattle on the farms and the cattle marketed in this country. It is also very evident to us who are watching things as they go along, that we must make a change and make it as rapidly as possible if we are going to hold our place in the world's markets and as a great livestock-breeding nation.

As you very well know, the good stuff is even to-day commanding a very fair price, probably not as high as we would like to see, but when we compare it with prices paid last year, we cannot help but appreciate the fact that the best stuff in Canada is bringing quite as good, if not better, prices than similar stuff in other countries. Unfortunately, we have too much of this poor quality, and we all know that that character of product when placed on the market commands a very small price indeed.

I think we can be greatly encouraged by the result of the sale held yesterday. I was also very gratified indeed to hear the reports of the different breed societies at this meeting that sales and prices had been fairly satisfactory. I think, in view of the statements made by some, that we are about at the bottom, that we should feel gratified indeed that conditions have not got any worse with us. That appears to be the situation at the present time.

In the United States, where the agricultural situation has been more severe than here, there has been a tremendous feeling of depression among the farmers during the past year or two. This is shown in the various conventions held there and the Congress of Farmers from all over the United States to discuss the matter and make representations to the public. We, unfortunately, are suffering more or less from the representations made by these farmers inasmuch as a very severe tariff has been imposed against our exports to their country. But even so, when we have the right article, we can do something toward exporting there and still make a little profit; it might be little but it can still be done.

It seems to me, in view of the depression of prices and the quite evident situation in so far as poor stock is concerned, that is, scrubs going to the abattoirs and stockyards, that this movement is most opportune. When the man that produces scrub stock sees that his article, when sent to the market, brings him but little more than enough to pay for the freight, while his neighbour, who has good stock, is able to get a fair price for his product, he cannot but appreciate the importance of having good stock. Hence it should be very much easier at the present time to induce the scrub bull owner to at least make an effort to improve his stock. When we compare prices available now for that character of product, with prices paid three or four years ago, we cannot help but appreciate the fact that the scrub farmer is the one who is catching it now. He does not get enough to pay for freight, and certainly not enough to pay for the feeding of the stock. Hence, it seems to me, now is the opportune time to press forward in this campaign and make every possible effort to make these changes and bring about this improvement in our stock-breeding conditions.

It is true that the breeder of pure-bred stock feels somewhat depressed from the certain lack of demand and certain low prices, but if the breeder of pure-bred stock will study the situation, as he is no doubt doing, he will appreciate the importance of his getting busy and doing what he can to help this movement along.

I have to congratulate you as breeders of pure-bred stock, because I think you are all here as officials of one association or another, upon your generosity in this matter. It seems to me to speak very highly indeed for the breeders of Oxford or any other county that they should find it in their hearts—or possibly I should put it, that they see it in a business way—advisable to contribute bulls at such low prices as they have been doing, practically for nothing in some cases, no doubt. When the breeders in any given district see the situation in this way,

and show that they see it by contributing these bulls, it speaks tremendously well for the acumen and ambition of these men to make their industry successful and to help along the interests of the livestock breeders of Canada.

There is one other point which I would like to mention, and that is the desirability of the breeder of pure-breds at the present time getting the scrub pure-bred out of his herd. I won't say any more. You all know the necessity for it: you all appreciate the importance of it. I have been tempted many times, both in my own herd and as a Government official, to sell the last pure-bred that we could sell, even if he was not quite up to the standard. I think we have gotten over that in the Dominion Experimental Farm herds. We have gained sense enough to know that if we sell a pure-bred scrub once, we cannot sell him the second time in the same place, and we are not only injuring our own trade, but injuring the interests of that breed, and of the pure-bred breeding industry in that locality. The same result is achieved by the private dealer or breeder who sells a pure-bred scrub. It is an opportune time to carry on a campaign among ourselves along this line.

We have, as a Federal Department of Agriculture, been co-operating with the Provincial Department and with the District Representatives in this work. We are delighted to have been able to do this, and we are firmly determined to continue in our co-operation, and we hope that the campaign may be extended.

ADDRESS

Hon. Duncan Marshall, Commissioner of Agriculture, Ottawa.

I was interested in the statements made by the District Representatives as to the actual practical work that they have done in the improvement of livestock in their counties. These are things worth doing, and need to be done in every Province of the Dominion, no matter how old it is. In fact, one of the striking things in driving through the country often is, that where you see two or three farms with good livestock, you will find on adjoining farms that men are carrying on with the most nondescript kind of scrubs, and because of the lack of agricultural education in our country in the past, we have got to get to the men who are farming and operating in this way and, if possible, assist them to improve their conditions. This is not only true of Canada, but as a matter of fact in the last three years the British agricultural journals have been going so far as to advocate legislation which would compel a man, if he kept a bull, to keep a pure-bred bull on his farm for service. Any bull he kept, even for his own herd, would have to pass inspection, or he would be compelled by Act of Parliament to ship him or destroy him. This is very drastic legislation and has not been enacted, but is seriously proposed and advocated by the livestock journals published in London and elsewhere, showing the necessity for the agitation there.

The Old Country is a peculiar land in livestock matters. They seem to hang back for forty or fifty years, and then when they do anything with regard to legislation, they go the whole length. I remember reading in a Scottish farm paper, articles with respect to legislation in Manitoba and other Provinces of the Dominion regarding the inspection of stallions. It said that this was very advanced legislation, and it was a pity Scotland would not do something along this line. Scotland did not do anything for several years after, but when they

did it, they went just as far ahead of anything we have as they were behind before, and to-day they have the most stringent inspection of stallions, and now they are preparing legislation with regard to pure-bred mares as well, with the view of standardizing their horses.

Work that these young men have discussed this afternoon is exceedingly valuable.

I want in this connection to say a word on behalf of Lord Beaverbrook, a man sometimes criticized by the newspapers in Canada, but after all, he is a Canadian over in London, and he is fighting for Canada all the time, and no man has made a stronger impression on the British Government than he has. He was able, with his newspaper, to defeat the present President of the Board of Agriculture in a by-election on the question of the embargo. Most British public men will tell you if the embargo was made the actual question in their election campaigns, that seventy-five per cent. of their candidates in the different constituencies could not get elected if they were not in favour of the removal of the embargo.

RESOLUTION REGARDING THE BRITISH EMBARGO AGAINST CANADIAN CATTLE

Moved by J. D. Brien, Seconded by John Lowe, and

"Resolved, That the Ontario Cattle Breeders protest against the unfair continuance of the British embargo against Canadian cattle, and in view of the report of the British Royal Commission, which decided in favour of its removal, this Association urges the Government of Canada to press our country's claims upon this matter, under the promises given at the Imperial Conference in 1917, under the report of Britain's own Royal Commission, upon the admitted ground of Canada's freedom from scheduled disease and upon the ground that Canada is entitled to equal treatment to that accorded the Irish Free State." *Carried.*

Mr. Lee moved "That this meeting place on record its approval of the offer of assistance from the Department of Agriculture in regard to shipments of livestock to the National Dairy Show or International Fat Stock Show, and believe that such would be a great benefit in advertising our livestock in the world's markets.

"This meeting also wishes to place on record its appreciation of the assistance of Mr. Wade in this connection." Seconded by Mr. Thompson and carried unanimously.

LIVE STOCK IMPROVEMENT IN ONTARIO

Better Sires Campaign.

Ontario, owing to its strategic position geographically in the Dominion, and also by reason of the fact that the farmers of the Province are by custom and inheritance naturally livestock men, and also because Ontario was one of the earliest parts of the Dominion settled, there was naturally a strong tendency toward this Province supplying, to a greater or less extent, the rest of the Dominion with their breeding stock.

As the livestock industry develops, a great many breeders of this Province have, through their initiative, skill and care as breeders, made Ontario's live stock well-known in all parts of the North American continent. One would naturally suppose that with examples of high-class stock grown in nearly every county of the Province, and owing to the opportunity of seeing the best of stock at the various large annual exhibitions, fall shows, and winter fairs, that the commercial stock of the country would show that there had been an active response to the call for not only good registered stock, but stock of the best quality from a commercial standpoint.

The idea that Ontario was, and should be, the breeding centre of America, has been, no doubt, fairly firmly fixed in the minds of a great many of our stockmen, and it is with the greatest degree of disappointment we take a census of the standing of Ontario's livestock, and find that our number of milch cows are not averaging 4,000 pounds of milk per year, and that our commercial beef animals are not of that quality which would make their handling as profitable as it should be.

Census of 1921 gives the total number of cattle in Ontario to be 2,890,113, made up of the following classes:—

Total number of calves	651,532
Total number of steers	249,099
Total number of other cattle	717,453
Total number of milch cows	1,204,270
Total number of bulls	67,759

Number of farms in Ontario, 175,000.

Estimated number of farms on which a bull is kept, 50,000 to 60,000.

Estimated number of farms which can be said to have a bull of fair to good quality, 25,000 to 30,000.

Estimated number of farms on which inferior or scrub bulls are used, 25,000 to 30,000.

Since the proportion of inferior bulls used in the Province is approximately fifty per cent. of the total number used, we can estimate the progeny from such inferior bulls to be approximately fifty per cent. of the total number of cattle in the Province.

We notice that there are 651,532 calves in 1921, which would lead us to believe that there are something over 300,000 calves sired by inferior bulls, and therefore, the amount lost to the Province from lack of quality, through the inferior inheritance of these calves, would be on an average of from five dollars to fifteen dollars per calf, $1,500,000 to $4,500,000.

Of the 249,099 steers in the Province in 1921, forty-five per cent. of these, taking the figures for 1919 would grade "Common" and would bring the owner at least thirty-three dollars less per steer than the fifty-five per cent. of the steers which grade "Good." Forty-five per cent equals 112,000 steers, at thirty-three dollars equals $3,696,000, which represents the loss to the farmers.

Common Steers, average weight 850 lbs. @ 3½c. lb. equals $29.75.

Good Steers, average weight 1,050 lbs. @ 6c. lb. equals $63.00.

We have so far dealt with commercial cattle, and the loss as shown on their actual market value gives, in the case of calves, $3,000,000 and on steers $3,696,000.

We now come to another class of stock in which the loss from inferior breeding is not only on the point of commercial value, but also on the lessened amount

of product from this class. We refer to "Milch Cows," of which there were in Ontario in 1921, 1,204,270. Of this number a conservative estimate would give 600,000 of these cows sired by bulls of inferior breeding and quality, and it is a very conservative estimate which placed the actual market value of these 600,000 cows at ten dollars per head less than the other class of cows which were sired by bulls of good to fair quality and breeding. These figures show that the actual value of milch cows from a sale or commercial standpoint is equal to a $6,000,000 loss in the value of these cows. This however, is only a small part of the loss sustained by the owners, as our farm survey report made by Professor Leitch shows that in one of our best dairy counties, cows on farms where good males have been kept from five to ten years, the actual excess profit was fifty-one dollars, but on those farms where inferior sires were kept the average profit was only eighteen dollars. These figures show that if on every farm the policy of using first-class males was consistently followed that every cow of the 600,000 in the Province at present in the lower rating would be able to secure for their owners an additional profit of thirty-three dollars each, which would make for the 600,000 cows $19,800,000 annually more than they now produce.

When we total all these losses sustained by our cattle raisers, we feel that if there can be any solution found for this tremendous loss of practically $32,000,000 per year to the Province, that any Legislature would be justified in voting money for the "improvement of our livestock."

To show that the losses quoted are conservative, it is only necessary to give instances from personal experience, reports, and investigations.

Loss in Steers.

In 1919 of 183,323 head classed as beef cattle, fifty-five per cent. of these were graded as "Good," selling on an average of $12.50 per hundredweight. The forty-five per cent. grading "Common" sold on an average of $9.40 per hundredweight. The seller received $51.35 more for an animal which graded "Good" than for one graded "Common." Had the forty-five per cent. each graded "Good" the cattle would have sold for $7,697,467 more than they were sold for. This loss of seven million was on stock received at the Union Stock Yards, Toronto, which represents only one third of Ontario's stock. If the same grading held true throughout Ontario, it would mean that all of Ontario's beef cattle sold for something over $20,000,000 less than they could have sold for if they had all been of sufficient quality and finish to grade as "Good."

COMPARATIVE EFFECTS OF GOOD CROPS AND GOOD LIVESTOCK ON AMOUNT OF LABOUR INCOME. (A. Leitch.)

Farms with	Poor Livestock	Medium Livestock	Good Livestock
Poor crops.....	No. of farms - 39 Labor income $449	No. of farms - 36 Labour income $1,335	No. of farms - 20 Labour income $1,398
Medium crops.....	No. of farms - 68 Labour income $674	No. of farms - 50 Labour income $1,398	No. of farms - 54 Labour income $1,909
Good crops.....	No. of farms - 20 Labour income $786	No. of farms - 26 Labour income $1,473	No. of farms - 25 Labour income $2,134

The foregoing table demonstrates clearly that good livestock is the greatest contributing factor towards financial success on the farm.

TABLE SHOWING THE VALUE OF THE PURE-BRED HERD SIRE

	No. of farms	Labour Income	Milk sold per Cow	Feed per Cow	Profit over feed
Grade Sire	131	$ 961	$ 94	$ 76	$ 18
Pure-bred Sire, 5 years or less	49	1,248	117	81	36
Pure-bred Sire, 5-10 yrs	46	1,473	115	81	34
Pure-bred Sire, over 10 yrs	74	1,710	137	86	51

The above table shows the value of the continued use of improved sires. Where good sires have been used for a period of at least ten years, the profit per cow is nearly three times as much as the profit obtained from cows in herds where grade sires are kept.

TESTIMONY BY W. A. CLEMONS, SECRETARY OF THE CANADIAN HOLSTEIN-FRIESIAN ASSOCIATION.

"The scrub bull is the most expensive piece of cattle flesh on the farm. The presence of the scrub in so many herds—many times without a single qualification except that he is a male—is a disgrace to the dairy business. The only thing on earth the scrub sire is good for is sausage, and it is high time this plain and simple truth was given practical acceptance on every dairy farm."

TESTIMONY BY G. E. DAY, SECRETARY OF THE DOMINION SHORTHORN BREEDERS' ASSOCIATION.

"A bull will sire anywhere from one hundred to several hundred calves during his life-time.

"Suppose we place the number of calves at one hundred, and suppose the calves by one bull are worth an average of $5 per head more than the calves by another bull, what would this mean?

"It would mean that the one bull would be worth to his owner $500 more than the other bull, except the small difference in interest in investment.

"If the difference in value of the calves were $10 per head, the difference in the value of the bulls would be $1,000, and correspondingly greater for wider differences in the value of the calves.

"There are cases where steers by a good bull have brought $50 per head more than steers of the same age by inferior or scrub bulls.

"These figures should make any man pause before buying an inferior bull, merely because the price is low."

WORK ALREADY DONE, IN LIVESTOCK IMPROVEMENT

In 1919 at a Conference held at the time of the Winter Fair at Guelph, between representatives of the Ontario and Dominion Departments of Agriculture, plans were discussed and finally a working agreement was made with the Dominion Department by which the Ontario Livestock Branch, assisted by fieldmen appointed and paid for by the Dominion Department of Agriculture, undertook the work of *Livestock Improvement* in the Province.

A few counties were chosen in which to carry on the work, and while the advance was necessarily slow, there were very many encouraging features about the campaign in 1920. The number of bulls changed in that year was 216 beef, and 149 dairy, making a total of 365.

In 1921 the work was carried on with an increase in the number of fieldmen appointed by the Ontario Department, and in the counties in which the work was concentrated, very gratifying results were obtained. In Huron County good registered bulls were placed to the number of seventy-four, these were all of the

beef breeds. In Oxford County in 1921 from fifty to sixty scrubs were replaced by pure-breds, these were largely of the dairy breeds. In Grey, Bruce, Peel, Halton, Dufferin, Glengarry, Hastings, the work was carried on largely through the individual efforts of the Agricultural Representatives, assisted in most cases by the field-men.

The final results for 1921 show that there were placed in that year 147 beef bulls; 165 dairy bulls, making a total of 312.

Method of Procedure in Huron County

Huron County was organized through our field men arranging meetings with a few of the leading men of the County. A Committee was formed for the county, and men were selected in each township to assist in the work. First by giving information as to class of bulls kept in their neighbourhood. Second, by encouraging farmers to attend meetings. Third, by their personal stand for *Better Livestock*.

There were a number of *Livestock Improvement* meetings held, at which meetings, moving pictures showing best types of cattle were displayed, slides were also very largely used, and the field men and leading stock men of the Province were secured to give practical talks on the importance of livestock improvement. These meetings were followed by personal canvass by the field men. Wherever interest in the work warranted, the Dominion Department of Agriculture, established exchange stables, and once a man who had formerly kept a poor bull had, through the influence of the field men, decided to purchase a *Better Bull,* he was able to visit the exchange and secure one. There were three exchanges opened, Exeter, Clinton, and Wingham.

The result of the work in Huron County cannot be estimated, as there is not only the advantage to the individual by raising stock from a *Better Sire,* but also an incentive to that individual when he requires to place this sire with another: he will, no doubt, from his experience with an improved sire, be inclined to secure an even better one.

There is also the influence on the general public, the advantage to the young man growing up seeing the advantages of *Improved Livestock,* and in addition the stimulus which is given to any community by producing better stock, and being widely advertised as producing better stock.

Through the campaign being carried on in Huron County, the county secured the greatest publicity through the Press, and we believe that the breeders and feeders of Huron County have a wider outlook on the importance of first-class stock than they ever had before.

Bruce and Grey Counties

The work carried on in these two counties, owing to lateness of season when it commenced, was necessarily not nearly so extensive or far reaching as in Huron, but owing to the fact that in each of these Counties the work was only carried on in one or two townships, the effect from the campaign should be increasingly effective, as the class of bulls placed in Bruce and Grey should make these townships where such bulls were placed the centre for interest in *Better Livestock*.

Oxford County

Oxford County carried on the work from rather a different standpoint, there being a very large number of breeders of pure-bred stock in the county, and as a

great majority of the breeders are raising dairy cattle, and as the placing of dairy bulls could be brought about at comparatively less cost than the placing of beef bulls, a system of local improvement was brought about by the county organization.

A number of leading men in the county formed a *Local Livestock Improvement Association,* the central body being formed of representatives from each township. The secretary of this local association was the agricultural representative, Mr. Green. The Association secured from the breeders of the county, an agreement to furnish a good pure-bred bull, six months or over, in an even exchange for a scrub bull. The scrub bulls were secured by canvass and were collected and shipped by car-lots to the Union Stock Yards, Toronto. The freight was paid by the Ontario Department of Agriculture. The Commission firms in Toronto gave their services free of charge, and the Union Stock Yards gave free yardage and feed. The money obtained from the sale of these scrub bulls was therefore, the full amount of their value without deducting anything for freight, feed, commission, and the average price of these bulls amounted to something like twenty-five dollars. The sixty pure-bred bulls thus given in exchange by the Oxford County breeders netted to the owner of the pure-bred bull something like twenty-five dollars. These pure-bred bulls were subject to inspection by officials of the Livestock Branch, and therefore, we can safely say that only high-class, pure-bred bulls were placed in Oxford County, and we are also safe in saying that the average value of these bulls was at least seventy-five dollars, which shows that the breeders of Oxford County actually donated to the owners of scrub bulls in the County at least $2,500.

To show the class of bulls offered by the breeders we can cite one instance where the breeder had kept the calf for the six-months period, but owing to the fact that through delay on the part of the farmer who was to secure him he was not lifted at the end of the six months, and the breeder sold him for $150.

We have another case where a bull was valued at $200 and was turned in to a farmer in exchange for his grade bull.

The Oxford County Association not only did this work, but also secured from the municipal councils a census for each township. We have therefore, a more accurate report of the class of bulls used in Oxford than in any other county. The effect of the census was two-fold, the one result of course was to give to the Association Executive figures on which to work, but in addition to this the very fact that the assessors' report would show the class of bull a man kept, influenced a very great number of the men to dispose of their scrub bull privately (not through the Association) and to secure a pure-bred to replace him.

The Oxford County Livestock Improvement Association was fairly well satisfied with the work done in 1921, but there remains even in this county a very great task to perform, as the census reports show that in this leading county of the Province, something between five hundred and six hundred scrub bulls are still in use, with at least eight hundred farms where the service of a scrub bull is obtained.

Peel County

In this county the Agricultural Representative working with the *Advisory Agricultural Council* formed a County Executive, for the *Peel Livestock Improvement Association.* This Executive selected a township for the work in 1921, and in order to secure the fullest organization for the work, the selected township was divided into six blocks, and a sub-chairman being the leading man from that

division, was selected for each block. This sub-chairman had also selected at least five of the best men in his block to assist in the work, and this township organized through the committee of thirty-six, secured an accurate census of the township. Meetings were held in each block, and the members of the committee were influential in securing very good attendance for each meeting from the farmers in that block. The meetings were addressed by various leading livestock men of the Province, and following the meetings, a certain amount of local canvassing was done.

Later in the year one of the Dominion field men was secured and owing to the very thorough preliminary work in the township, very satisfactory results were obtained, and it is the intention of the *Peel Livestock Improvement Committee* as soon as the first township is fairly well worked over, to select a second township for their operations.

Work in General

In all cases where the work has been active in a county, slides have been and are being obtained and used, showing correct type of the various classes of livestock, and also showing improvement in stock by use of better sires. Moving pictures have been made use of wherever possible. Bulletins dealing with *Better Livestock* have been sent wherever thought advisable. Metal gate signs have been issued to men using pure-bred sires. The sign gives a first-class representation of typical heads of the following breeds:—Angus; Hereford; Shorthorn; Ayrshire; Holstein, and Jersey. There is also a space left on the sign for the owner's name. Application for signs should always be made through the Agricultural Representative.

Co-operation by Press

The Agricultural Press and the agricultural section of a number of our leading papers have given from time to time, very instructive and illuminating articles on *Live stock Improvement.*

Bankers' Association

The Bankers' Association has encouraged the work and have in various ways co-operated with the *Local Livestock Improvement Associations* and Agricultural Representatives. The banks have made it a general policy to loan money in all cases where a farmer wishes to secure such a loan for the purpose of purchasing a good registered bull, and we have known of a bank manager who has refused a loan when the farmer admitted that he wished the money to obtain a grade bull, the banker telling him that if he wished a bull to improve his stock he could readily have the credit.

Schools

There has not been as much influence from the public schools of the Province as would seem to be desirable, and in order to encourage a knowledge and love for *Better Livestock* the Department is issuing a small illustrated catalogue showing the highest type of animals of the different breeds. This catalogue will be accompanied by a small pamphlet which will be given to the teacher, in order that they may have a short interesting account of each animal given in the illustrated catalogue to present to the children.

If this method of developing a love for *Better Stock* is successful, it could be extended to all schools in the Province.

The Department has also a number of very fine reels of livestock which might also be used in the schools.

NUMBER OF BULLS PLACED BY COUNTIES, 1920, 1921

County	Number of Scrubs Replaced. 1920.		Number of Scrubs Replaced. 1921.	
	Beef.	Dairy.	Beef.	Dairy.
Bruce	0	0	6	0
Dufferin	30	0	25	0
Dundas	0	10	0	0
Durham	0	0	3	2
Carleton	1	2	0	0
Glengarry	0	6	0	45
Grenville	1	24	0	13
Grey	0	0	7	0
Halton	13	3	6	0
Hastings	2	50	0	43
Huron	10	0	75	0
Kent	25	2	0	0
Lambton	10	0	20	0
Lennox and Addington	1	4	0	0
Middlesex	24	4	0	0
Norfolk	2	10	0	0
Oxford	0	0	5	55
Prescott and Russell	0	12	0	0
Prince Edward	1	5	0	0
Peel	9	2	8	14
Renfew	3	5	0	0
Simcoe	6	0	0	0
Victoria	13	2	8	1
Waterloo	6	1	0	0
Wellington	40	0	0	0
Northern Ontario	19	7	3	0
Total Number	216	149	166	173

The Canadian Sheep Breeders' Association

The annual meeting of the Canadian Sheep Breeders' Association was held in the Hotel Carls-Rite, Toronto, on Tuesday, February 14th, 1922, at 8.00 p.m.

Officers.

President ..... H. Follett, Duval, Sask.
Vice-President ..... J. D. Brien, Toronto.
Secretary-Treasurer ..... R. W. Wade, Toronto.
Executive Committee ..... H. Follett, J. D. Brien, Geo. L. Telfer, Col. Robt. McEwen, R. W. Wade.

Directors.

W. B. Bishop, St. John, N. B.
Victor Sylvester, St. Hyacinthe Que.
Arsene Denis, St. Norbet Sta. Que.
J. A. McClarey, Lennoxville, Que.
George Gordon, Oak Lake, Man.
H. Follett, Duval, Sask.
R. Knights, Calgary, Alta.
G. H. Hadwen, Duncan Sta. B.C.
W. A. Dryden, Brooklin.
J. D. Brien, Toronto.
Col. Robt. McEwen, London.
Geo. L. Telfer, Paris.
R. H. Harding, Thorndale.

Representatives to Fair Boards.

Canadian National Exhibition: W. A. Dryden, Brooklin.
Central Canada Exhibition: W. A. Wallace, Kars; Geo. W. Acres, Vernon.

Royal Agricultural Winter Fair: H. Follett, Duval, Sask.; Jas. Douglas, Caledonia; Col. Robt. McEwen, *London*.
Canadian National Record Board: Jas. Douglas, Caledonia; Col. Robt. McEwen, London; W. A. Dryden, Brooklin; James Snell, Clinton.
Eastern Canada Live Stock Union: J. D. Brien, Ridgetown.
Western Canada Live Stock Union: H. Follett, Duval, Sask.

FINANCIAL STATEMENT

Of the Canadian Sheep Breeders' Association for the year ending December, 31st, 1921

RECEIPTS.

Cash on hand as per last report	$1,897 19
Registrations	6,736 96
Memberships	2,578 00
Interest	21 44
	$11,233 59

EXPENDITURES.

Directors' expenses	$1,296 20
Printing records	1,424 24
Printing notices	91 80
Record Office, balance 1920	749 47
Auditor	5 00
Hotel Carls-Rite, rental of room	34 65
Reporting annual meeting	20 00
Record Office, conducting record 1921	3,600 00
Membership fees, Eastern and Western Canada Live-Stock Union	25 00
Counting of ballots	3 00
Cash on hand	3,984 23
	$11,233 59

W. A. DRYDEN,
President.

R. W. WADE,
Treasurer.

REPORT OF DIRECTORS

The following is a statement of the Monthly receipts at the Record Office on account of Sheep in 1916, 1917, 1918, 1919, 1920 and 1921, including both registrations and memberships:—

	1916	1917	1918	1919	1920	1921
January	$ 422 40	$ 558 55	$ 756 40	$ 807 70	$ 831 20	$ 1,041 85
February	344 20	412 85	646 70	828 85	605 40	498 85
March	308 85	348 90	419 20	657 90	761 00	685 65
April	153 25	258 40	341 80	381 25	732 40	623 30
May	386 55	332 15	380 25	351 55	759 30	465 45
June	282 40	282 55	382 10	491 00	657 25	475 45
July	275 05	400 80	405 80	599 45	709 17	706 45
August	799 10	706 10	876 55	1,062 50	887 05	1,189 02
September	889 60	1,073 90	1,400 51	966 40	751 15	636 89
October	858 55	1,249 55	1,209 30	1,121 35	918 70	683 75
November	1,148 65	1,207 75	1,185 70	1,092 20	1,503 34	1,138 70
December	972 10	784 75	837 95	941 80	1,294 90	1,169 60
	$ 6,822 70	$ 7,616 25	$ 8,842 26	$ 9,301 95	$10,410 86	$ 9,314 96

Provinces	Registrations		Transfers	Duplicate and New Certificates
	1920	1921		
Ontario	5,359	4,075	1,943	3
Manitoba	591	331	230	1
Saskatchewan	547	539	279	19
Alberta	1,378	1,232	495	.....
British Columbia	150	165	81	.....
Quebec	1,822	1,775	1,129	4
New Brunswick	148	267	133	1
Nova Scotia	352	227	166	2
Prince Edward Island	113	147	68	.....
United States	21	132	36	.....
	10,481	8,890	4,560	30

The number of each breed of sheep recorded in 1914 to 1921 inclusive is shown in the following statement:—

	1914	1915	1916	1917	1918	1919	1920	1921
Shropshires	1,954	2,234	2,967	3,151	3,410	337	4,743	3,309
Leicester	1,012	1,074	1,594	1,595	1,859	1,593	1,271	1,167
Oxford Downs	808	1,439	1,701	2,023	2,478	2,771	2,285	2,157
Southdowns	179	195	260	278	263	271	318	293
Cotswolds	232	297	399	336	499	400	299	205
Lincolns	85	138	122	164	225	161	125	198
Suffolks	260	247	297	397	429	425	290	303
Hampshires	215	289	340	339	453	421	666	441
Cheviots	57	119	81	144	80	254	240	137
Dorset Horns	109	233	291	294	323	378	327	172
Romney Marsh	.....	.....	41	26	319	136	106	182
Rambouillet	.....	.....	.....	.....	23	263	34	355
Corriedale	.....	.....	.....	.....	.....	.....	2	.....
Total	4,911	6,265	8,093	8,747	10,361	7,410	10,706	8,919

STATEMENT OF RECORD OFFICE

Cash received at the National Record Office and deposited in the Imperial Bank to the credit of the Canadian Sheep Breeders' Association:—

JANUARY 1ST TO DECEMBER 31ST, 1921

For registration and memberships	$9,314 96
Interest	21 44
	$9,336 40

RECEIPTS AND EXPENDITURES FOR CONDUCTING THE SHEEP RECORD.

RECEIPTS.

Received from Association to pay salaries	$3,600 00
Part salary paid by Record Committee	1,802 13
	$5,402 13

EXPENDITURES.

Salaries to December 31st, 1921	$5,160 66
Refunds	148 08
Balance owing to Association	93 39
	$5,402 13

JNO. W. BRANT, *Accountant.*

IMPORTATIONS

The total number of importations during 1921 was 63.

Records.

Total number of Record Books on hand, 1,893.

The number of paid-up members of the Canadian Sheep Breeders' Association from 1914 to 1921 inclusive, are as follows:—

	1914	1915	1916	1917	1918	1919	1920	1921
Ontario	203	228	261	275	358	370	442	430
Quebec	248	252	292	317	353	343	328	308
Manitoba	25	26	27	46	57	66	61	43
British Columbia	7	10	13	15	22	25	25	20
Saskatchewan	28	29	40	56	75	89	76	63
Alberta	25	35	54	75	83	107	108	88
Maritime Provinces	27	38	42	50	48	69	82	69
United States	4	5	6	6	10	10	4	5
Total	567	632	735	840	1,006	1,079	1,126	1,026

PRESIDENT'S ADDRESS

W. A. Dryden, Brooklin.

The sheep industry has passed through a period of considerable prosperity during my time as President. Breeders are now face to face with new conditions as compared with those of the past few years, as they are getting back to conditions that existed prior to 1914, which might be called normal times in Live-stock and farming generally. I think the sheep industry has reverted to something more than normal, and is somewhat subnormal, but I do not think this sub-normal condition will continue, and better times are ahead without question. The breeding of sheep, whether thoroughbred or commercial, must be followed by those who are interested in the business, and the time has arrived when breeders must adjust themselves to face the situation as it now exists, and cope with it from time to time. Sheep breeding in this country needs the encouragement, not only of the Association, but of every individual member in it. The breeding of sheep means more to agriculture in Canada than most Canadian farmers believe, and it is for the breeders of pure-bred stock to show the way. Conditions as they now exist offer splendid opportunities for breeders to show how to take care of their flocks, and to reduce their breeding material to 100 per cent. efficiency, and rearrange their flocks so that they may be better than ever before. One encouraging feature in connection with sheep breeding is the opening for the sale of wool, as an organization has been developed so that the purchaser of wool may buy according to quality and grade. At first, purchasers of wool were doubtful and suspicious and would not take chances on samples, so they sent their men to the warehouse at Weston and inspected the pile of wool as to grade and quality, and would even take down a bale or sack and dig into the centre of it. To-day conditions have entirely adjusted themselves in conformity with the way wool has been handled, and now it is not uncommon for buyers of wool for manufacture as far as Sherbrooke, Quebec, to telephone, telegraph or

write an order, naming grade and quality as they have previously received it. This proves that manufacturers have developed confidence in the commodity.

The organization of producers of wool has thus taken a step in advance of old conditions when producers and purchasers took their chances as to quality. The Canadian Co-operative Wool Growers Association should feel gratified at the measure of support given them by the breeders of sheep throughout Canada in their selling operations; it is a matter of satisfaction to every breeder, and especially to every buyer of wool.

The Canadian Sheep Breeders' Association is up against the difficulty of having no surplus, the cost of producing records has increased so that it has kept pace with the increase in revenue, and at times exceeded it, so that the Association feels well satisfied if it breaks about even. A notice of motion has been filed which might affect the cost of printing records, which now cost $4,000 and are sent free to every member. I believe that probably seventy-five per cent. of those who receive the books pay no attention to them, and find them more or less a nuisance, and they are probably lost or destroyed. The notice of motion will call for the printing of only the number of books applied for, and it is anticipated that those who have no use for the records will probably neglect to order them, and thus the cost of printing can be considerably reduced.

I would urge the members of the Association to keep up their interest in breeding, maintain their flocks at a high standard of efficiency, keep their breeding ewes at a high level, and thus the future of the industry will be as bright as ever it was in the history of sheep breeding.

A letter was read from Dr. J. A. Couture, Secretary, Quebec Sheep Breeders' Association, enclosing resolution from the Sheep Breeders of Quebec, asking that the Annual meeting of the Canadian Sheep Breeders' Association, be held in Ottawa, instead of Toronto.

The President, stated that the Quebec resolution involved a change of constitution, which could only be done through a notice of motion, and therefore, no action was taken, by the annual meeting.

MARKING OF SHEEP

The following recommendation was received from the British Chamber of Commerce, referring to the use of proper material in marking sheep:—

"THAT in view of the great loss and expense incurred by all manufacturers of woollen goods owing to the presence of tar, pitch, paint, etc., in the raw wool, and also the amount of faulty manufactured goods resulting from the same cause, this Meeting urges the Council of the Associated Chambers of Commerce to take such steps as they consider best to impress upon all wool growers at home and abroad:

(*a*) The necessity of discontinuing the use of such deleterious materials in the marking of sheep:

(*b*) The great benefit that would thereby result to themselves in the increased value of the wool if guaranteed free from such matter, and,

(*c*) The great saving to all manufacturers of all woollen goods."

A number of members spoke re the use of various materials in *Marking Sheep,* and it was moved by Col. Robt. McEwen, seconded by Ernest Robson, "That the matter of using injurious material for marking, be referred to the Dominion Live Stock Branch, in order that they might institute an educational campaign." (Carried).

A letter was read from Mr. W. A. Dryden, President of the Royal Agricultural Winter Fair, asking for a grant.

As any surplus funds from the Canadian Sheep Breeders' Association have in past years been paid directly to the Provincial Sheep Breeders' Associations, the question of a grant to the Royal Winter Fair was discussed very fully, and with the exception of the Quebec Delegates, all members from the various Provinces were in favour of giving a grant to the Royal Agricultural Winter Fair. Owing to the opposition from the Quebec members, and as the meeting did not wish to make a change in the policy of voting surplus funds unless it was by unanimous consent of all members, it was decided not to press the point of a grant to the Royal Show.

AMENDMENTS TO CONSTITUTION

According to notice of motion, certain changes in the Constitution of the Canadian Sheep Breeders' Association, were introduced, and the following amendments were made, which have been approved by the Minister of Agriculture, May 11th, 1922:—

Section 3, Subsection 7, be repealed and the following substituted therefor:—

"Flock Books shall be supplied to members free, provided they make application for same on or before October 1st, of each year to the Canadian National Livestock Records. Those not applying before October 1st, may secure copies if available at actual cost of printing plus twenty-five per cent."

Section 15, Subsection 13—Fees. The fees for registration of pedigree are as follows:—

To members—Animals recorded before the First day of December of the next year following the year of birth, 50c.

To members—Animals recorded after the First day of December of the next year following the year of birth up to two years of age, $1.00.

Transfers—To second owner if made at time of registration of pedigree, 25c.

GOITRE IN LAMBS

It was moved by Richard Knights. seconded by R. H. Harding:—"That whereas, the disease of goitre in lambs has increased to a very great extent in Central Alberta, and whereas, it has appeared in parts of this district where it was hitherto unknown:

Be it therefore resolved that this annual meeting of the Canadian Sheep Breeders' Association, here assembled, petition the Honourable The Minister of Agriculture, to prepare and issue a pamphlet as to the cause and the best remedy to be taken to overcome the increased mortality in lambs from this disease." (Carried).

Mr. Knights stated that for several years it had been his work to increase the small flocks of sheep in Alberta District, and he had been more or less successful, as they have now quite a number of small breeders in districts where there had been no sheep before. Last year goitre in lambs appeared for the first time in that district, and he thought a pamphlet such as proposed would benefit not only Alberta but many other points, as he had learned that the disease was prevalent in many other districts. Very little was known of the disease, and he could get nothing that was practically sure as a remedy. He thought it might be owing to a succession of dry seasons, that something had appeared in the pastures that was not known hitherto. He had made investigations in a number of places, and had replies from nine men, who amongst them owned 342 ewes. There were 486 lambs dropped, of which 186 died from goitre.

PURE FABRICS BILL

Ernest Robson, referred to the resolution passed at the last annual meeting, asking for a bill requiring *Textile Manufacturers to brand their cloth*. The very low price of wool at present is causing great depression in the sheep industry, which would be stimulated by a *Pure Fabrics Bill* which would prevent substitution of shoddy for pure wool. Such a bill has been advocated in the United States Congress for ten years, and he believed it would soon be passed there, as more than 300 organizations were behind it. He read extracts from an article in the *American Sheep Breeder* for January, by J. B. Wilson, Secretary of the National Sheep and Wool Bureau, in support of the measure. He thought it would be a big thing for the wool growers of Canada to have such legislation.

George L. Telfer, stated that this matter called for a good deal of attention, as the demand for wool would be very much greater if Canadian people knew the real value of virgin wool, and believed that most people would gladly pay a little more for pure-wool goods.

H. S. Arkell, Livestock Commissioner, Ottawa, in his address, said:—The Livestock Branch has given a great deal of attention to the subject during the year, from time to time as opportunity offered. The problem might be viewed from three angles; The distribution cost of cloth operates strongly against the free sale of Canadian wool. I got two samples of serge cloth in Ottawa for my wife, one costing $9.75 a yard, and the other $12 a yard, yet the latter sample came from a Canadian mill, and had been identified by them, and the manufacturer had only received three dollars a yard for it. The retailing cost of distribution had quadrupled the price. Investigation shows that the wholesaling of Canadian cloth is in the hands of a jobbing trade that controls the whole situation, consumer on one hand and the manufacturer on the other. I think that control should be broken at once. The manufacturers are suffering from such control, and would welcome a solution of the problem. I would suggest that the resolution be along the line of supporting a committee of the Association and perhaps the department in co-operation with manufacturers, to break this control. Our investigation has shown that Canadian cloth to-day qualifies with the best imported cloth, yet imported cloth sells as superior to Canadian. In this respect also, consumers are in the hands of the jobbing trade, who are doing the Canadian trade a great deal of harm. One of the best ways of popularizing Canadian cloth and assisting Canadian manufacturers is, that certain standard grades shall be pro-

duced and sold as Canadian cloth—standard as regards weight per yard, tensile strength in the weave and the warp, and as regards taking of dyes. At present Canadian manufacturers are using Canadian wool, and if distribution costs could be reduced, the purpose would be accomplished much better than by the suggested resolution, I believe.

It was moved by J. E. Brethour, seconded by James Bowman:

"That the Directors appoint a committee to take up the question of 'Truth in Fabrics' with the Minister of Agriculture." Carried.

IMPORTATIONS OF FOREIGN MUTTON AND LAMB

Col. McEwen stated that one difficulty all over Canada was the importation of foreign mutton and lambs, retailed as lamb, and thought something should be done to control such sale. He, therefore, moved the following motion, which was seconded by R. Knights:—

"That, whereas, the question of importations of frozen mutton has, from time to time, been debated with no definite results as yet obtained, and whereas such imported frozen mutton comes in direct competition with the Canadian product; and whereas there is no means whereby the consumer can distinguish between the imported and the home-grown products;

"Be it hereby resolved, that this meeting go on record as favouring the adoption of some system of controlling the handling of the imported frozen product so that the purchaser may know what he is buying; and be it also resolved that a copy of this resolution be forwarded at once to the Federal Minister of Agriculture." Carried.

ELECTION OF DIRECTORS

For the year 1922, and the four years following, the representation of Directors will be determined on the following basis:—

Province.	Registrations 1920	Membership 1920	Total	Factor	Result of Division by Factor	No. of Directors
Maritime.....	613	82	695	1,287	.54	1
Quebec.....	1,822	328	2,150	1,287	1.67	2
Ontario.....	5,359	442	5,801	1,287	4.50	5
Manitoba.....	591	61	652	1,287	.50	1
Saskatchewan..	547	76	623	1,287	.40	1
Alberta.....	1,378	108	1,486	1,287	1.15	1
British Col.....	150	25	175	1,287	.13	1
	10,460	1,122	11,582	1,287		12

The Ontario Sheep Breeders' Association

The annual meeting of this Association was held in Toronto, February 15th, 1922.

OFFICERS FOR 1922.

President	W. Whitelaw, Guelph.
Vice-President	James Bowman, Guelph.
Secretary-Treasurer	L. E. O'Neill, Toronto.
Executive Committee	W. Whitelaw, Guelph.
	James Bowman, Guelph.
	Cecil Stobbs, Wheatley.
	G. H. Mark, Little Britain.
	L. E. O'Neill, Toronto.

Breed	*Director*
Cotswold	G. H. Mark, Little Britain.
Leicester	W. Whitelaw, Guelph.
Lincoln	S. Gardhouse, Weston.
Oxford	D. Johnson, Appin.
Shropshire	J. R. Kelsey, Woodville.
Dorset	Cecil Stobbs, Wheatley.
Hampshire	David Kelly, Shakespeare.
Suffolk	James Bowman, Guelph.
Southdown	D. E. McEwen, London.

General Directors.

J. D. Brien, Ridgetown. Geo. L. Telfer, Paris, Ont.

Representatives to Fair Boards.

Canadian National Exhibition, Toronto: J. D. Brien, Ridgetown.
Central Canada Exhibition: Geo. R. Thomas, Ottawa.
Ontario Provincial Winter Fair: James Douglas, Caledonia; John Kelly, Shakespeare; George Telfer, Paris; W. Whitelaw, Guelph.
Ottawa Winter Fair: W. A. Wallace, Kars; W. P. Hurdman, Hurdman's Bridge; F. Bell, Britannia Heights; G. W. Acres, Vernon.
Royal Agricultural Winter Fair: J. D. Brien, Ridgetown; Robt. McEwen, London; W. Whitelaw, Guelph.
Western Fair, London: John Kelly, Shakespeare; James Snell, Clinton.
Eastern Canada Live Stock Union: W. Whitelaw, Guelph.
Auditor: F. C. Hart, Toronto.

FINANCIAL STATEMENT

Of the Ontario Sheep Breeders' Association for the year ending December 31st, 1921

Receipts.

Cash on hand as per last statement	$21,218 29
Unclaimed cheques	45 00
Proceeds of ram sale	571 67
Dividend on stock	316 00
Interest on bonds and bank account	112 20
Sale of shepherd supplies	157 99
Sale of shearing machine	100 00
Sale of sacks and twine	18 03
Membership fees	1 00
Refund on sale of 1920 wool	14 79
Amount received from sale of 1920 wool	94,372 77
Refund on advance expenses, Smith's Falls	16 69
Refund on freight charges Co-operative Wool Growers	99 06
Refund on freight charges 1921 wool "overcharge"	3 11
Advance from Co-operative Wool Growers on 1921 wool	5,500 00
Sale of 1921 wool samples	95 15
Refund on advertising	45 00
Miscellaneous	68
	$122,678 43

EXPENDITURES.

Directors' expenses	$836 05
Grants, London and Guelph, 1920	625 00
Fees, Eastern Canada Live Stock Union, 1920-21	50 00
Expenses, annual meeting	24 00
Subscriptions to Journals	6 75
Special prizes	56 50
Shepherd supplies	77 64
Refund shepherd supplies	10 30
Exchange on cheques, etc.	3 41
Ram sale, London, auctioneer and expenses	45 99
Ram sale, London, payment for rams	716 00
Canadian Co-operative Wool Growers' stock	91 84
Payments on wool, 1920 shippers	109,719 16
Postage	171 21
Advertising	205 13
Printing	164 96
Telephone	26 95
Office help	105 00
Office supplies	195 00
Expenses of staff	402 58
Rent, warehouse, Smith's Falls	75 00
Advance expenses Smith's Falls	750 00
Express charges	91 87
Warehouse equipment, Guelph	388 09
Labour re wool sale	2,615 82
Freight charges on wool, 1921	4,852 72
Auditor	50 00
Membership fees C.S.B.A. 1921-22, account G. D. Minor	4 00
Cash on hand December 31st, 1921	326 46
	$122,687 43

W. WHITELAW,
President.

L. E. O'NEILL,
Treasurer.

After a discussion as to the benefits of grading stations, a motion re the adoption of the financial report was put to the meeting and carried.

PRESIDENT'S ADDRESS

W. WHITELAW, GUELPH.

I am pleased to see such a good attendance here. It shows that the sheep men, although there has been a great slump in prices, are still alive and alert and have plenty of faith in the sheep industry of our country. I do not know that I could do better than review a little of the work which the Ontario Sheep Breeders have carried on during this past year. I might refer to the wool. We, as usual, graded the wool at Guelph. We also opened up a grading station at Smith's Falls where we assembled the wool, and I think, outside of one year, we could say we got more wool than any other year. At one time it seemed as though we might possibly be stuck with a lot of that wool, but happily it has all been sold, perhaps not at very remunerative prices to the grower, but after all is said and done and you figure out the expenses, I believe that it has netted him more than he could have obtained from the dealer on the street.

Another new venture we took on last year was the ram sale we held at London. We made a bid for fifty rams, but we got only forty-two. About thirty-five of them went under the hammer, and I can say it was a fairly successful sale. We had a lot of good rams and they sold at fairly good prices, but we had a few undesirables. Of course, that matter can be straightened out by the committee in charge if there is to be a sale held in the future.

Another feature that we carried on was the donations to fairs. We gave the usual donations to London, Toronto, Guelph Winter Fair and the Ottawa Winter Fair. We also gave to the boys and girls at the smaller fairs small prizes for the fitting of lambs by them, that is, boys and girls under sixteen years of age. I personally saw one of those exhibits, and I am sure if the judge, Mr. James Douglas, were here, he would say it was well worthy of what we did. I refer to the Galt show, and I suppose others were just as interesting and successful as this one was.

A meeting was held in Guelph in which the Livestock Branch at Ottawa and Toronto were in conference one afternoon with the Ontario Sheep Breeders. I am not going to say anything about that meeting, as there are members of both here and they may say something this afternoon about what happened at that meeting.

What can I say of the future of the sheep industry of this country? I am no pessimist. I am not here to preach a gospel of despair to any of you. I have enough faith in the sheep industry of this country to say to any of you who have been a little hard hit, "Tighten up your belts another notch and stick." I have been in the business all my life, and that has been a long while. I do not know whether I made a success of it. I do not know whether I have made any money at it, but there is one thing that I have been invariably asked by people in my district: "Does it pay you to stay in?" Well, I do not know whether it pays or not, but I have always managed to pay the wages and taxes and have a little left over to go on. However, I can not say this for the year 1921. I believe in all the years that I have been in the business it has been the poorest year that I have ever had. I know, anyway, that it would not pay any dividend. But there are a lot of things which do not pay any dividends.

But with all this, I am not at all discouraged. I am going to stick. I still have my breeding ewes. I would not part with them, because I am convinced that the man who will stick to his breeding ewes, will benefit therefrom. I do not believe there could be a more opportune time than the present to get into this business. You can get in easily now. Some people will tell you that sheep are hard on the land. I tell you there is nothing that will enrich the fertility of your soil more than to have a few sheep roaming around your pasture.

Before closing I would like to recommend to the incoming Directors of this Association that they carry on, following up the work of this ram sale that we held this year, taking care to get the best individuals they possibly can, true to type, and selling almost exclusively shearling rams. We had an experience at London of taking in some ram lambs and they are hardly desirable.

I would also recommend to give to Fairs, as they have done this year, and to the boys' and girls' clubs, but I think the time has come—we are financially sound, remember in this Association—when we have to pare things to the bone.

JUDGES RECOMMENDED BY THE ONTARIO SHEEP BREEDERS' ASSOCIATION

CANADIAN NATIONAL EXHIBITION.

Cotswolds		J. C. Ross, Port Dover.
	(Reserve)	James Underhill, Claremont.
Dorsets		H. N. Gibson, Chazy, N.Y.
	(Reserve)	D. Kelly, Shakespeare.

Hampshires		D. Kelly, Shakespeare.
	(Reserve)	A. S. Wilson, Norval.
Leicesters		H. B. Jeffs, 28 Page Street, Toronto.
	(Reserve)	E. R. Wood, Freeman.
Oxford Downs		D. Kelly, Shakespeare.
	(Reserve)	D. Johnston, Appin.
South Downs		Noel Gibson, Dundee, Ill.
	(Reserve)	Graham Walker, Chazy, N.Y.
Shropshires		F. W. Gurney, Paris.
	(Reserve)	W. H. Beattie, Wilton Grove.
Lincolns		D. J. Brien, Ridgetown.
	(Reserve)	John Gardhouse, Weston.

CENTRAL CANADA EXHIBITION.

Cotswolds		J. D. Brien, Ridgetown.
	(Reserve)	S. Dolson, R. R. 2, Norval.
Leicesters		James Snell, Clinton.
Oxford Downs		D. Johnson, Appin.
Shropshires		Wilfred Shields, Caistor Centre.
	(Reserve)	Andrew Knox, Caledonia.

ONTARIO PROVINCIAL WINTER FAIR.

Cotswolds		N. Park, R. R. 6, Tavistock.
	(Reserve)	James Underhill, Claremont.
Dorsets		W. H. Beattie, Wilton Grove.
Hampshires		R. H. Harding, Thorndale.
Leicesters		W. S. Dunnett, R. R. 3, Hagersville.
Oxford Downs		D. Kelly, Shakespeare.
	(Reserve)	D. E. McEwen, London, R. R. 4.
South Downs		Graham Walker, Chazy, N.Y.
	(Reserve)	Geo. McKerrow, Pewakee, Wis.
Shropshires		Andrew Knox, Caledonia.
	(Reserve)	W. H. Beattie, Wilton Grove.
Lincolns		T. L. Patrick, Ilderton.
	(Reserve)	W. J. Gardhouse, Weston.
Short Wool Grades		David Kelly, Shakespeare.

OTTAWA WINTER FAIR.

Cotswolds		Sandy Dolson, R. R. 2, Norval.
Dorsets		S. R. A. Dolson, Norval.
Hampshires		A. S. Wilson, Norval.
Leicesters		J. M. Gardhouse, Weston.
Oxford Downs		S. Dolson, Norval.
Shropshires		John Lloyd Jones, Burford.
	(Reserve)	Alex. Dolson, R. R. 2, Norval.
Lincolns		J. D. Brien, Ridgetown.

ROYAL AGRICULTURAL WINTER FAIR.

Cotswolds		Sam Dolson, R. R. 2, Norval.
	(Reserve)	James Underhill, Claremont.
Dorsets		R. H. Harding, Thorndale.
Hampshires		A. S. Wilson, Norval.
Leicesters		James Douglas, Caledonia.
	(Reserve)	J. M. Gardhouse, Weston.
Oxford Downs		John Miller, Ashburn.
	(Reserves)	J. E. Cousins, Harriston.
		Fred Lee, Simcoe.
South Downs		Geo. McKerrow, Pewakee, Wis.
		Peter McKenzie, State College Penn.
Shropshires		J. H. Hanmer, Ames, Iowa.
	(Reserve)	John Lloyd Jones, Burford.
Lincolns		Wade Toole, O.A.C., Guelph.
	(Reserve)	H. Lee, Highgate.

WESTERN FAIR, LONDON.

Cotswolds		G. H. Mark, Little Britain.
	(Reserve)	J. D. Brien, Ridgetown.
Dorsets		W. H. Beattie, Wilton Grove.
Hampshires		J. E. Jackson, Ballycroy.
Leicesters		Wm. Clarkson, Weston.
	(Reserve)	Adam Thomson, Shakespeare.

Oxford Downs		J. E. Cousins, Harriston.
South Downs		David Kelly, Shakespeare.
	(Reserve)	Geo. Telfer, Paris.
Shropshires		Arch. McEwen, Brantford.
	(Reserve)	John Lloyd Jones, Burford.
Lincolns		Wm. West, Ilderton.
		D. Mitchell, Glencoe.

INTERNATIONAL EXPOSITION, CHICAGO.

Leicesters		Wm. Clarkson, Weston.
	(Reserve)	John Featherstone, Hornby.

EXTENSION WORK IN SHEEP

In the fall of 1916 the Department of Agriculture, through the Livestock Branch, in an endeavour to increase the popularity of sheep raising in sections of the Province particularly suitable to this industry, placed demonstration flocks with junior farmers, who agreed to follow certain methods as laid down by the Livestock Branch. The following were the original conditions under which these flocks were placed:

CONDITIONS UNDER WHICH SHEEP ARE TO BE PLACED IN ONTARIO, BY THE LIVESTOCK BRANCH.

1. The flock shall consist of five females.
2. The placing of the flock shall be decided from the result of a sheep-judging competition held by the Agricultural Representative.
3. Junior farmers taking part and winning first place in such competition shall be entitled to receive the flock by signing agreement with the Director of the Livestock Branch.
4. The winner must be engaged in farming.
5. The flock will only be given to those who have not been keeping sheep since 1912.
6.—The sheep are to be returned as follows: 2—one or two shear ewes October, 1919; 2—one or two shear ewes, October, 1920; 2—one or two shear ewes, October, 1921.
7. After the last pair of ewes are given to the Livestock Branch in 1921, flock owner will have full title to the flock.
8. Ewes given in 1917, will be bred. A ram will be provided 1918, the following year by the Livestock Branch, the ram to be kept by the flock owner until the following August, 1919, when he shall be delivered as the Director of the Livestock Branch directs, after which date the flock owner must himself provide a pure-bred ram for use on the flock.
9. Each year up to and including the fourth year, the flock owner shall supply to the Director of the Livestock Branch, a report giving date of lambing, success of lambing, date or shearing; weight of wool, date of weaning, lambs of either sex sold, gross receipts, and any other information that may be of general interest, on forms supplied by the Livestock Branch.
10. The Livestock Branch will have full title to the sheep until the last pair of ewes are delivered, and any failure to comply with the above rules would cause a forfeiture of the flock by the flock owner.
11. In case the flock owner finds it necessary to sell the sheep before the final share is given, he may do so by delivering over to the Livestock Branch, the full share of six ewes.

There were five flocks placed in the fall of 1916 with the following men:

W. K. Whitely, Spencerville, Grenville County.
Hubert McCaugherty, Streetsville, Peel County.
Le Roy Berry, South Mountain, Dundas County.
John Currie, Currie's Hill, Glengarry County.
Clayton D. Miller, West Montrose, Waterloo County.

These flocks consisted of six grade ewes to each flock. The thirty sheep were purchased and sent to the Ontario Agricultural College, and in the last week in November were placed with the ram. They were kept at the O.A.C.

until some time in January, 1917, and were shipped to their respective flock owners. There were practically no lambs in the spring of 1917, so the first return of shearling ewes had to be postponed until the fall of 1919.

In the fall of 1917 it was desired to place more flocks, and selection of flock owners was left to the Agricultural Representative. The policy was to cover Northern Ontario and certain sections in Eastern Ontario especially suitable for sheep raising. There were seventeen flocks put out in the fall of 1917. These flocks were to consist of five females instead of six, and were given subject to the following agreement.

AGREEMENT BETWEEN THE LIVESTOCK BRANCH OF THE ONTARIO DEPARTMENT OF AGRICULTURE AND OWNERS OF DEMONSTRATION SHEEP FLOCKS

The Livestock Branch offers to furnish:—

(1) A flock of five females.

(2) Ewes given in 1917 will be bred. A ram, if desired by flock owner will be provided in the fall of 1918 by the Livestock Branch.

The foregoing agreement on the part of the Livestock Branch is made on condition that the flock owner shall comply with the following:—

(1) The ram supplied by the Livestock Branch in 1918 shall be kept by the flock owner until August 1919, when he shall be delivered as the Director of the Livestock Branch directs, after which date the flock owner must provide a pure-bred ram for use on the flock.

(2) Returns of sheep to the Livestock Branch are to be made by the flock owners as follows: 2—one or two shear ewes in October 1919; 2—one or two shear ewes in October 1920; 2—one or two shear ewes in October 1921; after which returns the flock holder will have full title to the flock.

(3) Each year up to and including the fourth year, the flock owner shall supply to the Director of the Livestock Branch, a report giving:—date of lambing, success of lambing with number of lambs of either sex, date of shearing, date of weaning, lambs of either sex sold, gross receipts, weight and grade of wool sold, and gross receipts for same, and any other information which may be of general interest.

(4) The flock owner must dip the flock at least once a year, he must dock all lambs at the proper time, and he must castrate all male lambs.

(5) The Livestock Branch will have full title to the sheep until the last pair of ewes is delivered, and any failure on the part of the flock owner to comply with the conditions of agreement shall cause a forfeiture of the flock by the flock owner.

(6) In case the flock owner finds it necessary to sell the sheep before the final share is given, he may do so by delivering to the Livestock Branch the full share of six ewes.

I, ... (Name of Owner) ..... (Address)

In the County or District of ..... do hereby agree to fulfill all the conditions of agreement as laid down by the Livestock Branch of the Ontario Department of Agriculture.

.....
(Signature of Flock Owner)

THE FOLLOWING MEN RECEIVED FLOCKS IN THE FALL OF 1917.

Wm. Sinclair, Huntsville, Muskoka.
Arnold Tipper, Etwell, Muskoka.
Morris Unger, S. River, Parry Sound.
A. R. Hearn, S. River, Parry Sound.
J. G. McLean, New Liskeard, Temiskaming.
A. Calvert, Uno Park, Temiskaming.
F. Alderdice, Hanbury, Temiskaming.
Harry Parker, Uno Park, Temiskaming.
N. H. Livingston, Douglas, Renfrew.

Jno. McLaren, Arnprior, Renfrew.
Leonard Laventure, Glasgow, Renfrew.
Harry Williamson, Norwood, Peterboro.
W. G. Barrie, Norwood, Peterboro.
W. S. Elliott, Norwood, Peterboro.
Jas. Liddle, Detlor, Hastings.
Thos. Morrison, Bancroft, Hastings.
C. S. H. Jordison, Hybla, Hastings.

In addition to the above flocks additional flocks were placed as follows in the fall of 1918:—

Max Featherston, Burlington Jct., Halton.
Sheldon McIntosh, Stirling, Hastings.
In 1919, Stanley Martin, Huntsville, Muskoka, was given a flock.
In 1920 flocks were placed with:—
Gordon Hill, Hillside, Muskoka.
Robt. O'Brien, Sundridge, Parry Sound.
R. Brooks, Heaslip, Temiskaming.
Jos. Lachine, Hanbury, Temiskaming.

In order that the extension work in regard to these flocks might be carried still further than showing the advantages of dipping, docking and castrating, together with the improvement in uniformity and type of the flock through the continued use of the pure-bred ram, it was thought desirable, in the fall of 1920, that the demonstrations should be carried still further in showing that lambs produced under this system of sheep husbandry would command a premium for market in car-load lots on the public stockyards; consequently Grey County, one of the leading sheep counties of the Province, was chosen for the work.

Two clubs were formed, one at Markdale and one at Dundalk.

The Markdale club consisted of the following members.

W. R. Buchanan, Flesherton, R. R. 2.
W. M. Davis, Markdale, R. R. 5.
Gordon Shaw, Markdale, R. R. 4.
Elmer Warling, Markdale, R. R. 4.
Otto Baker, Markdale, R. R. 4.

These flocks consisted of ten grade ewes.

The Dundalk club was made up of the following members.

Reg. Wade, Dundalk, R. R. 2.
Wm. Sturrock, Dundalk, R. R. 2.
Alvin Beckner, Dundalk, R. R. 2.
Stanley Duncan, Conn, R. R. 2.
Jas. Hardy, Croton Station, R. R. 2.
Manley Gamble, Cedarville, R. R. 1.

There were twelve ewes in each of the flocks with this club.

The conditions under which the flocks in both these clubs were placed were similar to the conditions under which the smaller flocks were placed in 1917 and 1918, with the exception that the returns from these flocks were to be distributed over a period of four years, until an equal number of ewes had been returned, to the original number of ewes in the flock.

The club members agreed with the Livestock Branch to co-operate in making an annual club shipment of lambs to the Toronto market.

In 1921 the members of the Dundalk club, after retaining their best ewe lambs for breeding purposes, and making their returns as per contract, in the fall of 1922 shipped forty-seven lambs to the Toronto market. These lambs averaged at Dundalk ninety-two pounds, and without any culling brought the highest price on the Toronto market for the day, with the exception of a hand-picked lot of about one dozen lambs that were selected from a car-load; thus fulfilling one of the purposes for which these clubs were placed.

The first returns of ewes from these two clubs will be made in the fall of 1922. In all there will be thirty shearling ewes returned, and it is hoped that another club in Grey County may be formed, to be used as a similar demonstration.

RAM CLUBS

In the fall of 1921 Ram Clubs were formed in three counties, namely, Lennox and Addington, Lanark and Renfrew. The following agreement covers the placing of rams in these clubs:

AGREEMENT BETWEEN THE LIVESTOCK BRANCH OF THE ONTARIO DEPARTMENT OF AGRICULTURE, AND THE OWNERS OF DEMONSTRATION SHEEP FLOCKS.

(1) The flock owner will be furnished a pure-bred ram of good quality, to be used by him for the season of 1921 and 1922, and to be exchanged for another pure-bred ram for the season of 1923 and 1924.

(2) The ram used for the season of 1921 and 1922, shall be delivered to the Livestock Branch the fall previous to the breeding season of 1923.

(3) The ram used for the season of 1923 and 1924, shall be delivered to the Livestock Branch, the fall previous to the breeding season of 1925.

(4) The flock owner agrees to forward a report beginning fall, 1922, and continuing until the fall of 1925, said report to be made to the Director of the Livestock Branch, and to give the following information:—Approximate date of lambing, success of lambing with number of lambs of either sex, date of shearing, date of weaning, lambs of either sex sold, weight and grade of wool sold, beginning spring, 1922, 1923, 1924, 1925, and any other information which may be of general interest.

(5) The flock owner agrees to dip his flock at least once a year, to dock all lambs at the proper time, to castrate all male lambs, and to co-operate with the other flock owners under this agreement in making an annual club shipment of wethers belonging to this flock to some central market. The dipping, docking and castrating will be done by the Dominion Livestock Branch, co-operating with the Agricultural Representative for the County, and the Agricultural Representative will co-operate with the flock owners in order to arrange a shipment most satisfactory to the owners of the lambs.

(6) In case of failure on the part of the flock owner to comply with conditions of agreement, the ram furnished by the Livestock Branch may be withdrawn by the Branch.

I ....
(Name of Owner) (Address)

In the County or District of ..... do hereby agree to fulfil all the conditions of agreement as laid down by the Livestock Branch of the Ontario Department of Agriculture.

.....
Signature of Flock Owner.

It will be noted in this agreement that the Livestock Branch of the Ontario Department of Agriculture is co-operating with the Livestock Branch of the Federal Department, and the Agricultural Representative in each county, in making these flocks serve as a practical demonstration of the benefits of dipping, docking and castrating, together with the marketing of the lambs at proper weights, in a co-operative manner at the public stock yards.

It is hoped that follow-up work may be done in each of these counties as a result of the demonstration, in selling to other farmers good pure-bred rams for use on their flocks, and in organizing co-operative shipment of lambs to central markets.

The following are members of each of the aforementioned clubs:—

LENNOX AND ADDINGTON.

Thos. J. Carroll, Tamworth, R. R. 2.
James A. Howes, Tamworth.
John J. Neville, Erinsville.
James O'Neill, Erinsville, R. R. 1.
Frank Quinn, Erinsville, R. R. 1.
Martin Donohue, Alphonsus O'Neill, } Erinsville, R. R 1.
William Shannon, Tamworth.
John T. Rogers, Tamworth, R. R. 2.
D. W. Detloe, Tamworth, R. R. 2.

LANARK.

Alex. Barr, Clayton, R. R. 2.
David Caldwell, Clayton, R. R. 1.
John Caldwell, Tatlock.
Robt. McKearney, Clayton, R. R. 2.
Alex. McKay, Middleville.
Michael McKirdy, Clayton, R. R. 2.
James E. Manson, Clayton, R. R. 2.
John A. Munro, Clayton, R. R. 2.
John R. Paul, Poland.
Jas. H. Rintoul, Clayton, R. R. 1.
Wm. Rintoul, Clayton, R. R. 2.
J. T. Somerville, Middleville.

RENFREW.

Albert Bederman, Golden Lake, R. R. 1.
Charles Bokert,, Eganville, Box 125.
M. J. Breen, Eganville, R. R. 3.
Wm. S. Byers, Eganville.
Patrick Coyne, Eganville, R. R. 2.
James Curray, Dacre, R. R. 2.
F. Hein, Eganville, R. R. 2.
Frank Heideman, Eganville, R. R. 4.
G. W. Lett, Eganville.
Stafford Lett, Eganville, R. R. 6.
Walter Lett, Eganville, R. R. 1.
W. Geo. Lett, Eganville, R. R. 6.
J. J. McGrath, Eganville, R. R. 4.
A. N. Neitzel, Eganville, R. R. 5.
Chas, Papke, Eganville, R. R. 5.
August Pilatski, Eganville, R. R. 5.
Henry Raglin, Golden Lake, R. R. 1
Herman Timm, Eganville.
A. T. Warren, Eganville, R. R. 1.
Sam Jamieson, Eganville, R. R. 5.

The Ontario Poultry Association

The annual meeting of this Association was held in Guelph, at 8.00 p.m., December 2nd, 1921.

OFFICERS

President	J. S. Greenshields, Toronto.
First Vice-President	Thos. Simpson, Guelph.
Second Vice-President	R. Oke, London.
Executive Committee	J. S. Greenshields, Thos. Simpson, R. Oke.
Secretary-Treasurer	J. E. Rettie, Parliament Buildings, Toronto.

Directors

J. S. Greenshields, Toronto.
J. H. Saunders, London.
Geo. Robertson, Ottawa.
W. McNeil, London.
R. Oke, London.
A. W. Tyson, Guelph.
W. Carter, Londesboro.
Thos. Simpson, Guelph.
G. G. Henderson, Hamilton.
A. E. Field-Marshall, Beamsville.
Jos. Russell, Toronto.
J. C. Donovan, Toronto.
Prof. W. R. Graham, O.A.C., Guelph.

Representatives to Fair Boards

Canadian National Exhibition: Wm. McNeil.
Central Canada Exhibition: G. G. Henderson, G. Hall.
Eastern Canada Live Stock Union: J. H. Saunders, Wm. Moore, Hamilton; J. S. Greenshields.
Ontario Provincial Winter Fair: Wm. McNeil, J. H. Saunders, Thos. Simpson, A. W. Tyson.
Royal Agricultural Winter Fair: J. S. Greenshields, J. W. Clark, A. E. Field-Marshall.
Western Fair Association: H. R. K. Tozer, J. H. Saunders.

FINANCIAL STATEMENT

Of the Ontario Poultry Association for the Year Ending November 26, 1921

Receipts

Cash on hand as per last report	$737 63	
Membership Fees, 1921	444 00	
Total		$1,181 63

Expenditures

Directors' Expenses	$319 20	
Office Help	225 00	
Auditor	2 50	
Cash on hand	634 93	
Total		$1,181 63

W. R. Graham,
President.

J. E. Rettie,
Treasurer.

Ontario Department of Agriculture

REPORT

OF THE

WOMEN'S INSTITUTES

OF THE

PROVINCE OF ONTARIO

1920 and 1921

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
Printed and Published by Clarkson W. James, Printer to the King's Most Excellent Majesty
1922

Printed by
THE RYERSON PRESS

To His Honor HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOR:

The undersigned begs to present for the consideration of your Honor the Reports of the Women's Institutes of Ontario for 1920 and 1921.

Respectfully submitted,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1922.

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Women's Institutes of Ontario 1920 and 1921

To the Honourable Minister of Agriculture:

The report presented herewith covers the activities of the Women's Institutes for the past two years. Instead of reporting separately the several conventions held during these two years, it has been thought well to publish addresses and papers of general interest and to compile "Institute News" from all parts of the Province.

The activities of the Institutes, during the past two years, especially 1921 indicate a very keen and growing interest in all problems bearing upon home efficiency, child welfare, education, health and recreation, especially for the young people.

The women of experience have much of value for each other, and are carrying on most valuable work through the utilization of local talent and resources, and are doing most effective work of a community character. Local relief work, as the need arises, is becoming more and more an important feature of Institute work.

The Institutes themselves are doing much to extend the organization to other centres, the small towns, villages and chiefly the rural sections. The persons employed by this branch are devoting their time largely to assisting in special lines of work as requested by the Institutes and giving instruction through two weeks' courses in "Food Values and Cooking," "Home Nursing and First Aid," and "Sewing." The number of such courses held during the past twelve months are summarized herewith:

		Enrollment.
52	in Home Nursing and First Aid	2,593
33	in Food Values and Cooking	1,476
63	in Sewing	913
148		4,982

The enrollment in the Sewing Course seems out of proportion to the number enrolled in the other courses, but this is explained by the fact that, in a class in Sewing, the number must, necessarily, be limited.

Speakers were furnished for meetings held at 703 places during late May, June, and early July, 1921; and requests for speakers to address special meetings were responded to throughout the year.

We are presenting herewith only brief statistics covering the work of the year 1920-21. Any who wish to get statistics for any particular county or counties will be furnished the same upon application. The membership reported for the 924 branches for the year was 30,906. The number of regular monthly meetings held was 9,451, with a total attendance of 156,719. Of the large amount of money raised in various ways, $135,566.67 was expended in paying incidental expenses in connection with the Institutes, and for various community and charitable purposes.

The officers of the Federated Women's Institutes of the Province, together with the chairman of the Standing Committees are given below:

FEDERATED WOMEN'S INSTITUTES OF ONTARIO.

OFFICERS FOR 1921-22.

President ..... Mrs. Geo. Edwards, Komoka.
Vice-Presidents ..... Mrs. Chas. Yates, Athens.
Mrs. M. J. Nixon, RR No. 1, Sault Ste. Marie.
Mrs. Jas. Gardner, Owen Sound.
Corresponding Secretary ..... Mrs. Chas. Macoun, RR No. 4, Campbellford.
Recording Secretary ..... Miss W. Brodie, Dept. Agriculture, Toronto.
Executive ..... President, Vice-Presidents, the Corresponding Secretary and the following Directors: Mrs. John Graham, North Bruce; Mrs. H. Dummert, Carleton Place; Mrs. A. McTaggart, Fort Frances; Mrs. J. McDonough, Copetown.

CONVENERS OF PROVINCIAL STANDING COMMITTEES

Publicity ..... Miss E. M. Chapman, Department of Agriculture, Toronto.
Health ..... Dr. M. Patterson, 97 Walmer Rd., Toronto.
Agriculture ..... Mrs. R. G. Leggett, Newboro.
Home Economics ..... Miss O. Cruikshanks, Macdonald Institute, Guelph.
Education and Better Schools ..... Miss K. F. McIntosh, Brampton.
Immigrattion ..... Miss E. J. Guest, Dept. Agriculture, Toronto.

MEMBERS PROVINCIAL BOARD OF DIRECTORS

Sub-division Director.	*Institute Districts Represented*
No. 1. Mrs. A. H. Robertson, Maxville	Dundas, Glengarry, Stormont.
No. 2. Mrs. H. Dummert, Carleton Place	Carleton, Lanark, Renfrew
No. 3. Mrs. Chas. Yates, Athens	Addington, Amherst Is., Brockville, Frontenac, Grenville, Leeds, Lennox.
No. 4. Mrs. C. A. Bleecker, Marmora	Hastings, Northumberland, Prince Edward.
No. 5. Mrs. E. W. Jennings, Lindsay	Durham, Haliburton, Peterboro, Victoria.
No. 6. Mrs. B. Johnston, Islington	Ontario, York.
No. 7. Mrs. Jas. Gardner, Owen Sound	Dufferin, Grey.
No. 8. Mrs. F. Wilson, Mount Forest	Halton, Peel, Wellington.
No. 9. Mrs. J. E. McDonough, Copetown	Haldimand, Lincoln, Welland, Wentworth.
No. 10. Mrs. A. B. Rose, Echo Place	Brant, Norfolk, Oxford South, Waterloo.
No. 11. Mrs. A. A. Watt, Bracebridge	Muskoka, Simcoe.
No. 12. Mrs. Walter Kirstine, Matheson	Parry Sound, Temiskaming.
No. 13. Mrs. M. J. Nixon, RR No. 1, Sault Ste. Marie	Algoma, Manitoulin, St. Joseph's Is., Nipissing.
No. 14. Mrs. A. McTaggart, Fort Frances	Kenora, Rainy River, Thunder Bay.
No. 15. Mrs. John Graham, RR., North Bruce	Bruce, Huron, Perth, Union.
No. 16. Mrs. Geo. Edwards, Komoka	Lambton, Middlesex, Oxford North.
No. 17. Mrs. Nora Bruner, Olinda	Elgin, Essex, Kent.

The chairman of the Convention Committees for the different divisions of the province are as follows:

Eastern—Mrs. Chas. Yates, Athens.
Central—Mrs. Jas. Gardner, Owen Sound.
Northern—Mrs. A. H. Willet, Cochrane.
Thunder Bay—Mrs. A. McTaggart, Fort Frances.
Western—Mrs. Geo. Edwards, Komoka.

Since the report presented herewith contains much information as to the activities of the Institutes, it is unnecessary to further summarize the work they are doing.

Plans have been made to give more effective assistance to the women on the farms, especially in so far as up-to-date planning and equipment for the home is concerned. Labor saving devices, the use of power, water supply, etc., are receiving special attention from this branch as well as the staff of the Agricultural College. Full announcements as to the services available, both by way of lectures, demonstrations, and literature, are made to the Institutes from time to time.

The Institutes are very appreciative of the service rendered through the Department of Agriculture, as well as other Departments of the Government, especially the Departments of Education and Health.

Instructors and lecturers have been furnished to a number of centres where Institutes do not exist, and we trust that more such centres will ask assistance; for the service which the Department has to offer is available to all localities where groups of women will undertake to furnish a suitable place in which to hold meetings or classes with a guarantee of good attendance, and will invite all women and girls in the community to take advantage of the instruction offered.

The Institutes appreciate very much the appointing of an Assistant Superintendent, Miss Ethel M. Chapman, and with her assistance, and the available staff of capable instructors, the services of the Department can, we feel, be made much more effective than in the past.

The possibilities of giving service of real value to the people in the manner indicated, and the great value of effort on the part of the women and girls themselves, have been so forcefully demonstrated in many sections that I have no hesitation in urging that the organization of women and girls be extended and the service strengthened.

GEO. A. PUTNAM,
Superintendent.

TORONTO, 1922.

The Origin, Activities and Possibilities of Women's Institutes in Ontario

George A. Putnam, Superintendent, Toronto.

In addressing the World Disarmament Conference, President Harding's message to civilization was: "We are met for a service to mankind. In all simplicity, in all honesty and all honor, there may be written here the avowals of a world conscience refined by the consuming fires of war and made more sensitive by the anxious aftermath." These words will be classed among the most important historic utterances for all time to come; but let us consider for a moment what the leaders of the Nations met for—to determine upon a policy of ceasing to destroy and ceasing to kill. The task which lies before the Women's Institutes, however, and which has been their objective for many years—conservation of life and service to humanity, in the home, in the community, and in the Nation—is a still more important responsibility. To cease to kill, and to determine not to destroy is but one step removed from barbarity, while the avowed task of the Women's Institutes is the highest ideal of organized civilization.

In the eighties, some few years after the Agricultural College and Experimental Farm had been established at Guelph, when the Government were seeking a means whereby publicity could be given the excellent work undertaken at that Institution, the officials made a generous offer to the farmers whereby lecturers would be sent to them to give information on farming. The organizations formed in the various counties to co-operate in carrying on this work were known as Farmers' Institutes. Our legislators and our educators did not offer a similar service to the women,

Just One of the 924 Women's Institutes of Ontario.

for their duties consisted only in caring for human beings. The clothing, the housing, the feeding of the boys and girls, men and women, did not directly increase the monetary returns, and therefore, were not considered as a responsibility of the Government. The women were permitted to attend the meetings planned for the farmers, for they had been "doing their bit," and were desirous of getting information bearing upon butter-making, bee-keeping, poultry raising, small fruit growing, etc., work that women can do, and do well.

Interest in some of the things considered at the Farmers' Institute meetings resulted in a group of women in Saltfleet township, Wentworth county, asking themselves why they should not form an organization for the discussion of their own particular responsibilities and their own work. When the suggestion was made at a Farmers' Institute meeting held on February 19, 1897, to which the women had been specially invited, there was no hesitation in organizing a Women's Institute, and the men were most anxious to assist in whatever way they could. The objects of Women's Institutes as set forth at that time were:—"The dissemination of knowledge relating to domestic economy, including household architecture, with special attention to home sanitation; a better understanding of the economic and hygienic value of foods, clothing and fuels, a more scientific care and training of children with a view to raising the general standard of health and morals of our people." This was added to in later years, as follows:—"or the carrying on of any line of work, which has for its objects the uplifting of the home, or the betterment of conditions surrounding community life." The motto of Ontario Women's Institutes, "For Home and Country," was adopted.

We cannot overestimate the importance of the fact that from the beginning the Women's Institute followed a most effective method—the utilization of local talent and resources at nearly all of their meetings—and secured specialists through the Department of Agriculture and from other sources for occasional meetings. The system of giving assistance to those who made an honest effort to help themselves was a wise proviso on the part of the government in offering assistance to the Women's Institutes.

The Institute was purely a homemakers' organization, but it was not long before the women of vision and earnestness saw that they had a community responsibility and opportunity as well as that relating to their own homes. There was another branch of house-keeping, community house-keeping, which needed their attention. The readiness with which the practical, efficient, experienced women of Ontario deal with problems of common interest, with unnecessary frills eliminated, is an example of efficiency which I have not seen duplicated; and my observation, based upon eighteen years' experience in co-operation with men's and women's organizations, is that women have the greater capability for organizing the resources of a community—planning work, and effectively carrying out the plans made.

We have in Ontario an organization embracing at the present time nine hundred and thirty branches, with about twenty-nine thousand members, which is recognized by those in close touch with their activities as a most forceful factor in the development of the individual, in making for home efficiency, introducing co-operative methods, establishing high standards for community activities and providing facilities for education, amusement and social intercourse.

In addition to our public and high schools and colleges for the rising generation, we have a school for adults, the Women's Institute, a very broad, a very elastic and very effective institution, throughout rural Ontario, which is something more than a teacher of facts to girls and women. It is an organization through which recommended methods are given the test of practical application under varying conditions by those who have everyday responsibility in the home and in the community. It is something more than an academic and a technical school. It is a propagandist, an administrator, and a safe-guarder of saneness in community activities.

Let us ask and answer a few questions regarding this school for grown-ups:—

1. What is the governing body?
2. Who are the teachers?
3. Who are the pupils?
4. What is the curriculum?
5. What are the text books?
6. What are the methods of teaching?

(1) The governing body in the Institute consists of the officers, chosen by the members, who should be representative of all homes in the community. Each branch is in absolute control of its own activities, and the branches in a district,—sometimes a whole county, sometimes part of a county,—join forces for their mutual

benefit, and to extend the work to new localities. Consolidation of the branches of a district facilitates their co-operation with the various departments of government service.

(2) Who are the teachers? The teachers consist of not only the members and other local talent, but also of persons from outside who have had special training along lines of value to the Institute membership. The discovery, utilization and development of local talent is one of the strongest features of the work.

In addition, the Department of Agriculture, through the Institutes' Branch, furnishes lecturers and demonstrators on most liberal terms to instruct and direct in Domestic Science, in all its branches; Health, Agriculture for Women, etc.

(3) Who are the pupils of this wonderful school? The first to be attracted are the women of responsibility in the home; and it is usually the efficient who are most anxious to gain additional knowledge. Then, we have the young women who are beginning to feel a sense of the responsibility which will come to them in later years. Young girls, over fourteen, find that there is much that they can get and give in the Institute. One most pleasing feature and an evidence of the practicability of the programme is that the pupils never graduate. The longer one is identified with Women's Institute work, the wider the vision and the keener the interest, the greater the desire for knowledge and the opportunity for service.

(4) What is the course of study? In the early days of the organization, food problems, clothing and the general welfare of the family in the home practically covered the field of activity, but it was not long until the members recognized the fact that there was such a thing as community housekeeping as well as the housekeeping and mothering in the individual home. So the programme of activity soon included a survey of local resources, needs and possibilities, embracing the schools, libraries, civic improvement, public health, social and recreational, opportunities, local relief work, etc. No two branches necessarily follow the same programme; so the activities can be made very attractive and helpful, for there is elasticity sufficient to meet the needs, desires and ideals of any body of women.

The programme of activity extends from the minutest detail in women's work to grappling with the biggest community problems of the district. A programme to result in the greatest good must be adjusted to local resources, talents, needs and possibilities.

(5) What are the text-books? The most important text-book utilized by all the Institutes is that unwritten book of practical experiences. Knowledge gained through practical experience by successful homemakers is much prized by the members. The Institutes, in their saneness, make practical application of information and suggestions, whether in print, or by word of mouth, to the resources, capabilities and possibilities of the individual family and community. The printed text-books consist of standard works of recognized worth along a variety of lines, including health, foods, methods of government,—municipal, provincial, and Dominion; the lighter forms of agriculture, parliamentary procedure, and a great variety of topics of interest to women and girls, not only as house-keepers and homemakers, but as citizens of a democratic country. Reports and bulletins from the various departments of the government, both provincial and Dominion, of interest to women and girls, are furnished the Institutes. The material and practical do not occupy the whole time of the members, for we find literature, debates, social activities, including entertainment of an instructive and recreative character; and games, are not overlooked. There is no restriction so far as the Department of Agriculture is concerned as to subjects to be considered.

(6) The methods of teaching are varied. In the early days it was very difficult in many branches to get the members to prepare papers or addresses or to give demonstrations; so an exchange of recipes, reading of selections from books, reports, bulletins, etc., with occasional papers by the members and other local talent, and assistance from outside, by way of addresses from speakers furnished by the government, characterized the work of the Institutes. It was not long, however, until nearly every Institute discovered that it had local talent, both within and without the Institute, with the result that addresses and papers presented at the regular monthly meetings were soon of a high character. The Institutes are now asking for lecturers and demonstrators who have had special training along definite lines; and the demand is increasing, not for single lectures, but for courses of instruction. During the past year we have given in Ontario courses of two weeks, in "Home Nursing and First Aid," "Domestic Science" and "Sewing," to 5,488 girls and women at one hundred and fifty-five centres. Many Institutes have libraries of their own, consisting of a number of standard works, and, of course, copies of bulletins and leaflets furnished by the provincial and Dominion governments. Travelling

libraries are also utilized to a considerable extent, and the women of the Institutes are co-operating with the local library boards in providing books of special interest and value to girls and women.

The number of girls who must look to the Women's Institute for educational opportunities after they leave the public school will remain greatly in excess of those from the rural districts who can attend high school and college. It becomes the responsibility of the whole people to see that the service to these is efficient and adequate.

While the Institute is an important factor as an educator and developer of talent, it has also come to be something more—an advisor and administrator in a variety of undertakings. True, these advisors and administrators have no legal standing and are seldom clothed with official authority. Nevertheless, the advice and co-operation of women chosen by the members of an organization representing all classes and interests in the community is being sought more and more in all community undertakings.

Many lines of interest to the whole people are receiving valuable support both in management and contributions from the Women's Institutes. Among these we may mention the securing of travelling libraries for many rural centres, reclaiming libraries which were not being utilized, co-operating with local library boards in securing books and periodicals of special value to the women, girls and boys of the community; establishing rest rooms; civic improvement, care of cemeteries; establishing parks, athletic fields, skating rinks, etc.

The tactful way in which the leaders in the Institute have discouraged excesses in social life, without being considered cranks of faddists, is a compliment to the good judgment of the leaders in community organization.

In the Women's Institutes, we have an organization for the education of the grown-ups and a medium through which many lines of government service can be carried on most effectively. This organization does not ask government support in securing buildings, equipment or providing local teachers. Full equipment and local assistance are supplied free. Whatever department of the government or approved organization or institution may wish to co-operate with the people of the rural districts, the women of the Institute are ready to place their machinery at the disposal of the same. Departments of Health, Education and Agriculture are particularly desirous of this co-operation, and much of what they have to offer to the rural districts can be made effective only by co-operation with an organization, and not with the individual.

This women's organization can be made of as much importance and value to the grown-ups as the public schools and colleges are to the youth of the land. The amount spent annually by the government in grants, literature, lecturers, demonstrators, administration, etc., is less than $1 per member, per year, while the Institutes themselves devote six to seven times this amount of money to the work.

While it is true that the members appreciate the Institute for the information gained and the advantages enjoyed, one of the chief attractions in this democratic organization is that it provides opportunity for service. The biggest asset of the Institute, insofar as national strength and development is concerned, is the spirit of service which it has engendered.

Here we have an organization which values very much the assistance received from the Government and is utilizing available funds most effectively. The future success of the work depends upon an enlarged and more efficient government service along a variety of lines, and the accepting of greater responsibility on the part of the women of the Institute, insofar as the extension of the work to new centres and stimulating interest in the activities of the Institute in all communities, are concerned.

There is no good reason why the Women's Institute should not be the educator, the administrator, the advisor, and the safeguarder of the best interest of the whole people in every community.

WOMEN'S INSTITUTES AND THE DEPARTMENT OF AGRICULTURE.

HON. MR. DOHERTY, MINISTER OF AGRICULTURE, TORONTO.

I realize and know something of the magnificent work which is being done throughout this Province by this association, and I realize that those assembled here tonight represent the officers of the local associations scattered throughout

the Province, and I know that behind you there are thousands of women who are giving most generously of their energy and of their time. I am very much interested in the aspirations of this young nation. I regard as of great moment, the financial problems that are facing this country. I am actively engaged in attempting to bring back some prosperity to our agricultural industry, but I realize, Ladies and Gentlemen, that all of these lines of effort would be of no avail if we did not bring sunshine and hope and kindness into the homes that go to make up the country, and I believe this is the great work you are engaged in.

In bringing this message of hope, in bringing greater efficiency into the home, in lightening the burden of the mother at home, I would ask you at all times to remember those who are living in the most remote parts of your various districts.

When the Women's Institutes of the Province of Ontario were conceived, it was with the idea that they would do this truly magnificent work of bringing to those living in the back concessions some glimmer of hope, some shadow of the advantages that can be enjoyed by those of us who live in the more thickly populated districts. On many occasions, I have visited remote parts of our counties both in Old Ontario and New Ontario, and I have heard from the lips of settlers' wives, the gratitude with which they think of the work which the Institutes have done for them. I can assure you that in all such efforts you have the support of the Government of which I am a member, and I know that you will have the thanks of all the people of the Province because the people now realize the magnitude and the importance of the work which is being carried on by the Women's Institutes of the Province of Ontario.

I believe you are already striving for greater co-ordination of effort among the local Institutes. While I have not had placed before me the details of the plan which you have in mind, I can assure you that any move looking toward increased efficiency or widening of the scope of your efforts will receive the support of the department over which I preside. In your growth and in the extension of your work, I believe there is a part that can and should be played by the Government, but I also believe that the Government by doing that which they should not do, would very largely destroy the effectiveness of your work. I am one of those who believe that in this effort, as in other lines of effort, if it is to be permanently successful, the initiative must not be removed from the people themselves, that no Government should thrust itself into the organization to the extent of controlling the organization. My advice to you is: keep yourselves free from domination by governments—not that I have any fear of ulterior motives on the part of the present government, nor have I it in my mind that the influence of that government is soon likely to be replaced, but I care not what government is in power, I feel that it would be taking a step in the wrong direction if you remove from the local associations anything of the control, or do anything that would destroy the initiative of those members composing that association, or make them feel that the organization is not their own.

There has come over this country in the last few years a very considerable change. The women of our country are now playing a very much wider part in our national affairs than heretofore, and I believe this is for the betterment of our public life.

I am of the opinion that this organization can very materially assist in lines of effort that you have not heretofore thought of. Confronted with the problems we now have, with our tremendous obligations, I believe that for this

country to shortly emerge upon an era of prosperity it is necessary that we should immediately bring to the great basic industry of the country—agriculture —prosperity. In bringing prosperity to agriculture, we will in a very short time bring prosperity to every other industry of the country, and I am also of the opnion that we can bring prosperity to agriculture in no way quite so effectively and quite so quickly as by spreading the gospel of co-operative effort throughout the country. I believe that the salvation of agriculture in Canada will ultimately come through the development of co-operation, and by co-operation I mean co-operation in production and co-operation in the marketing of products. If we view other countries which are our chief competitors in the markets of the world for agricultural products, we will find that in these countries co-operation has been developed twenty-five or thirty years ahead of us. We must not only produce co-operatively and produce at a very low cost, but we must also market the products of this country so that the returns to the producer will be satisfactory.

During the last year, believing in this doctrine absolutely, believing that the fruit industry of this Province was suffering because of lack of co-operation, we started a co-operative fruit organization which has been functioning throughout the past season and has done good work. An attempt is now being made to form a similar organization among the dairymen of the Province of Ontario, and the point I am now coming to and wherein I believe an organization of this kind can be of very great assistance, is that I have found it very, very difficult to convince even the producing farmers, of the advantages that will accrue to them individually and to the nation as a whole from the development of co-operative organizations.

In Denmark, where co-operation has been very highly developed, children in the schools from the early days are taught the fundamental, basic principles of co-operation. When they grow up, it comes naturally to them. They would not think of operating in any other way, and I hope that this great organization, spread all over this Province, will come to see the advantages which will come to agriculture as a whole and to the country from the development of this co-operative idea. I would ask this organiation to do what they can to make the work of the development of this organization a little easier, because even when we have the dairy industry in this Province organized, there will remain many other branches which will need to be organized in the same way.

These co-operative organizations are necessary. For twenty-five—yes, even thirty-five—years we have been preaching throughout this Province not only production, but quality in production, and I sometimes feel that our progress is very slow. If a Government makes a regulation demanding a certain grading of products, the people rather resent the interference of Governmental authority. They begin to question the right of any government to say to any producer, "You must produce goods of a certain quality," but if an organization, such as I have outlined to you, which originates with the people and belongs to the people, says to its members, "You must deliver to us such and such quality of goods, because all goods delivered to us will be graded and sold to the public under these grades, so that the public of this country, as well as the buying public of foreign countries will come to have confidence in the grades," then it is very easy for such an organization to make these regulations effective. I have seen it worked out in our fruit districts this summer. Two members of the organization brought in fruit stamped with a certain grade and the fruit was not up to grade This was found out by the customer who made a com-

plaint to the organization. They knew exactly by whom that fruit had been delivered, as the number is stamped on each package, and they called these two men and said, "Don't you know that this is against the regulations? Don't you know that we are trying to get the buying public of this country to understand that when they buy No. 1 peaches and pay for No. 1 peaches, they are going to get No. 1 peaches? Now you have not lived up to these regulations, and we fine you each $100." And they paid the fine, and I afterwards learned they were delivering A.1 fruit to the organization, always up to grade.

If we are to successfully compete in the markets of the world with our agricultural products, and I see no other way of paying off the tremendous obligations of this country—we must double, yes, treble, the agricultural production of this country. That means we must gain foreign markets and in order to gain foreign markets at proper prices, our goods must go on the market under a guarantee as to quality.

In this very important work I feel that this organization can render very, very great assistance. In order to double or treble our production, it will be necessary to have a very much greater producing population. Not only will an increased population in this country help us to greatly increase the production, but I see no other solution for some other problems confronting us. Speaking without any political significance whatever, I say that one of the greatest problems facing this country is our railway problem which has been thrust upon us. To my mind the railway problem, if we had 15,000,000 people in this country, would be solved over night. If this is true, then it is the duty of the local Government and the Department of Immigration, over which I preside, to make every effort to bring immigrants to this country. I am very enthusiastic in the matter of an energetic campaign to bring in immigrants, but I am of the opinion that we would be ill advised if we brought to the shores of this country indiscriminately, thousands and tens of thousands of people from here and there all over Europe. I have given my opinion to our Agent-General in London to the effect that Canada wants population, but to always keep in mind that it is better to have 1,000 immigrants who, when they come here have our sense of justice, our sense of law keeping and have our ideals, than to have 10,000 of those who have other ideals entirely, and very little idea of law and order. I am of the opinion there are thousands of people in Great Britain who would be better off if they were in this grain growing country, and this country would be better off in having them.

We are putting on a great campaign in the rural parts of Great Britain showing the opportunities which the rural parts of this country afford. We are not attempting to induce people to leave Great Britain, but we know that there are thousands of the very best blood of the Motherland going to different parts of the British Empire, and we believe it to be our duty to place truly and honestly before them the conditions which exist in this Province, and the opportunities which this Province holds out to those who are industrious and who are willing to work intelligently. Our problem is to secure these people for Ontario. We feel that there is no part of this whole Dominion that affords such advantages to the British immigrant as the Province of Ontario. The other Provinces all have their distinct advantages, but we claim that the conditions of life in this Province more nearly approximate the conditions in the Old Country than any other part of the Dominion. When you are transplanting families, you must always keep in mind that a contented immigrant is an

asset to a country, and a discontented immigrant is a liability, and it is our duty to transplant them to a district where they will be most likely to succeed and be happy.

Our problem is getting these new citizens for this country. We bring them here and we do our best to locate them so that they shall have a good chance of prosperity, but ladies, remember that there is something more to be done, and a government cannot do it. Some of you came out to this country from other lands, but if those who were born and reared here will try to place themselves in the place of a family where the growing boys prevail upon the parents to leave and come out to one of the Dominions, where they sell all their belongings in their little homes and leave the districts where they have lived all their lives, leave their many close friends and come out here to our shores, you may realize some of the feelings and fears which take hold of the mothers and fathers.

Now, ladies, that is where the women of Ontario can do a great and noble work. They can stretch out the hand of friendship to those new citizens; they can advise them and assist them. I feel that a country has no right to invite people to come to her shores unless she is prepared to reach out the hand of fellowship and friendship to these people when they arrive. I ask you that you see to it that these people are welcomed into your districts, see to it that they are advised and that they are assisted. Realize that your own fathers and mine came to this country, not exactly under the same conditions, but facing conditions that were quite new to them. We can do a great deal to assist and encourage these people and make them good citizens of this Province.

In regard to the various lines of effort of the Government and its institutions, I sometimes feel that we have just about reached the point when we should stop and make a survey and see if we are not overlapping in many places —see if we are obtaining the maximum efficiency from our universities, our agricultural colleges and schools, from the various lines of effort of our Department of Health, our Department of Education, and our institutes which are looking after the health of the school children of this Province. I believe that much can be gained by all of our departments intimately associated with these various lines of effort, sitting down together and co-ordinating, unifying their work, seeing to it that there is a minimum of overlapping, and seeing that a maximum of efficiency prevails in all of these various lines.

There went out of the rural life of this Province about twenty years ago, a great deal of community life which was enjoyed by the early settlers. All of you who live in the rural parts will agree with me that that was the case. Ten, or five, years ago in this Province there was not the same community life that we had thirty-five or forty years ago. I am happy to say that in the last few years there has been a very considerable revival of community life in our rural districts, and one of the most effective factors that I can think of to keep our young people on the farms and in the rural districts is the building up of a good community life. Realize, that while I am enthusiastic about bringing to this country the farmers of Great Britain, I care not how many thousands we bring out here, we can never hope to bring to our shores farmers whose chances of success are equal to the chances of success of our own boys who are born right on the farms of the Province. We should do everything in our power to maintain a very considerable percentage of our own rural boys upon the farms of the Province.

Legislation has been passed looking toward a revival of community life in our rural parts. This legislation provides for grants toward the building of community halls. Many of these have been built and many of them are indeed a great credit to the districts; there are a great many under construction at the present moment, but there are thousands of districts in the Province yet untouched. They are needed in these districts, and it only requires some active spirit to start the movement for the building of a community hall where various activities can be carried out, where short courses can be held during the winter season, and where the young people may have their meetings and their amusements. The Women's Institutes can do a very good work in starting this movement in the various rural districts of the Province.

I realize that a great deal of your work has been directed to child welfare, and let me say just how highly important this work is. We spend thousands of dollars each year upon the improvement of our livestock, we spend millions upon various public works, but this country, particularly at this moment, cannot do too much to save to itself the rising generation; cannot do too much to bring the rising generation to a realization of its duties, or to make it healthy and efficient or inculcate into the minds of the girls that the greatest honor that can come to a woman is a happy home, and of the boys that there can come to them in life no greater pleasure than is to be derived from their own effort. I sometimes am just a little afraid that the rising generation—yes and even the present mature generation—do not give honor sufficient to the man who works, and I would say to you in closing that in this great national work which you are carrying on, you have the appreciation of all the good citizens of this Province, and you have the undivided support of the Department over which I preside.

OUR STANDARDS OF LIVING

Hon. E. C. Drury, Premier of Ontario.

I have seen the Women's Institute grow from a very small beginning. I remember the time when I used to hear, though I was never allowed to believe it, that the Institute was a "place where women met for a social hour and to exchange cooking hints." We all know now that the Institute women meet to discuss not only tricks of the trade of home-making, but things concerning citizenship and the future of the nation.

The land is the greatest trust handed down to us. The very life of the whole province depends on the land, so it is important that it should be in the hands of good people—people who will guard its resources that we may always avert famine as they have it in the East from bad farming. Ontario should be settled by Anglo-Saxon people. We have built up our whole standard of life on the foundation the pioneers brought here from the Old Land, and the Anglo-Saxon will come to us if we can establish conditions as good as he could find anywhere else.

Our standard of living in the country is something to which we must give a good deal of attention. We have been too ready to copy city life, with the result that we have only a poor imitation. If farm life is to be an imitation of city life it will always compare unfavorably with it. It would be a good thing if the Institute could do something to revive the outdoor sports, football

and baseball, which had a very real place in country life some years ago. It would be a good thing for our churches if we could get ministers who did not have one eye on a city pulpit. It would be a better thing still if we could teach our children to fully appreciate country life.

Perhaps this last is a difficult thing to ask women to undertake, because women do not always appreciate the country. People tell me that the drift from the country to the city is largely because women want to go. Perhaps it is that women get the poorest deal on the farm. I don't know, but I do know that there are no conveniences possible in the city that are not possible in the country, and a few more. Our rural districts have been under-manned for the last several years, but they have been much more under-womanned. I have seen men break down from overwork on farms, but I have seen a great many more women break down from the same cause. It is regrettable that so many of our girls go from the rural neighborhood to the city, but the only remedy is to find a place for her in a rural home where she will want to stay. Even if we did not care about a better standard of living for ourselves, we want it for our children—that is the finest kind of conservation: handing down things to our children a little better than we found them.

The town and the country will have to pull together, to build up this Ontario. The way to remedy our misconceptions of each other's viewpoint is not to fight but to explain, not to over-ride other people's opinions but to argue them. The great bulk of the people in this country are sound at heart, willing to get the other person's viewpoint—and we need our friends of the town.

"We don't want to coerce or flatter or wheedle the farm boy into staying on the farm if he doesn't want to, but if he must go we might try to fill up the drain with boys from the city. It is easy for the country boy or girl to get into the city, but the boy of the city who tries to get out to the country finds every door closed against him. He is so handicapped by lack of experience that before he has a chance to really know the life he gets discouraged with it. I would like to open a door to the country for the city boy by establishing around a city like Toronto two or three agricultural schools, not agricultural colleges, but farms of two or three acres where he could learn to harness a horse and milk a cow. There is a great work for the Institutes to do in establishing a right public opinion. After all, the work of the people is much more important than the work of the Government. Governments are very finite things. We need a solid public opinion. One year of Government work has convinced me that the most difficult thing is to get people to let you do what you know you ought to do. And as an Institute, we do not want to make you too dependent upon the Government, but we want to come in and help you when we can.

THE RURAL PROBLEM

By J. B. Reynolds, President of the Ontario Agricultural College, Guelph.

Just before President Reynolds came to the platform the audience had been entertained by folk dancing and choral singing by a group of school children.

Mr. Reynolds then proceeded to say: "While I listened to that splendid choir I was thinking how impossible it would be to get such a choir together in some of our rural school sections where there are only two or four or five children in the school."

This was the real rural problem. Nothing in the way of community improvement, no labor-savers on the farm or in the house could compensate these children for their loneliness. In his own boyhood things had been different. They had a baseball nine in his own family and another across the road.

The rural problem, as we usually heard it discussed, said the speaker, was really a city problem more than a country problem. Rural depopulation reacts on production and so makes higher food prices. It is usually the city dweller who cries, "Back to the land," but he means, "Back to the land for the other fellow." The people in the city who cry out at the cost of milk and bacon should try keeping a cow or a pig. The scarcity of food is not the fault of the people in the country; it is the fault of the people in the city who ought to be in the country.

Still not every person, either city or country dweller, is gifted for country life. There are rural-minded people and urban-minded people. The rural-minded person doesn't object to manual labor; he likes the smell of prairie roses the ripening grain and new-mown hay. He likes to lean over the fence and talk to a neighbor while his horses rest. With these he is willing to put up with the disadvantages of country life. The urban-minded person craves constant association with other men, he likes the sight of brick walls, the feel of the pavement and the club room. He goes to a resort for a few weeks in the summer and makes himself believe that he is living in the country. The solution is that we train a lot of the children now growing up in the city to be rural minded.

In the minds of many people, said Dr. Reynolds, the rural problem is an economic one. Farming is not too remunerative, and he was glad of this because we do not want people in the country who are there just for what they can get out of it. Those who make the most money in the least time are the first to leave.

Other people consider the rural problem a labor problem. A lot of men out of work in the cities who could be working on the farms say, "No twelve hours labor a day, with milking cows on top of that for mine." Dr. Reynolds rather agreed with them. "The sooner farmers learn to systematize their work," he said, "the better it will be for themselves, their children, their hired help and country life."

Referring to the work done in the farm home fifty years ago, the speaker said that the modern farm home was no longer a factory but a spending department, that home economics was becoming more and more a science of how best to spend money. He did not regret the passing of the home factory; he felt that more work should be put out of the farm home and argued strongly for the need of community laundries. He also believed that something could be accomplished by lightening the style of housekeeping in eliminating some of "the frills and fussiness." "There are ten good housekeepers to one good home-maker," he said. "It is not only the heathen in his blindness that bows down to wood and stone. There are a great many women who allow the house to tyrannize over themselves and their families." It was most important that the women of the farms, through the introduction of labor-saving equipment and better planned houses, be relieved of as much as possible of the purely mechanical work of the house, that they might have more time to be companions to their families, and to work together for the common good of the community in its business enterprises, its education, its recreation and its worship.

OUR SILVER ANNIVERSARY

By Miss Emily J. Guest.

These are of us, they are, with us,
All for primal needed work,
While the followers there in embryo wait behind.
We to-day's procession heading,
We the route for travel clearing,
Pioneers! O! Pioneers!

The thought force of rural Ontario expresses itself in action. The 19th of February, 1922, marked the 25th anniversary of the day when the men and women of the country took definite action in organizing the first study centre for better home-making and community building in Saltfleet Township, known later as the Stoney Creek Women's Institute.

The Women's Institutes were organized as a sister society to the Farmer's Institutes, with the purpose of giving similar care, study and service to the country home and its human content, the family, as was given through the men's organization to the barn and field and their grain and cattle contents. In each neighborhood, one afternoon or evening a month was set aside by the women and girls of responsibility in home-making to be devoted to this study, followed by a social half-hour together.

Co-operation was the underlying principle of these non-partisan, non-sectarian groups, "For Home and Country" their inspired motto, and their "handful of aims," better homes, better people, a better community, a better and happier social life and a better and more scientific agriculture. With the simple working formula "If you know a good thing, pass it on," they drew out of the well of practical experience to help each other, discovering and developing as they did so a wealth of talent in themselves and others which more and more profoundly influenced Provincial life and action.

The Women's Institutes early had the sympathetic support of Ontario Agricultural College and the Department of Agriculture, and before many years, a further trinity of co-operation was achieved—that of the Home, the College, and the Government. The result of this was the gradual evolution of what is the first State Department of Home-Making set up by any Government, the Institutes Branch of the Department of Agriculture of the Province of Ontario.

This carried out the profoundly great and true vision of the pioneers in the movement, that home-making was not merely a woman's job, but the basis of strong and sound nation-building, and the business of men and women, colleges and government. This working partnership between rural home-makers and the government has brought about a condition of affairs which a quarter of a century ago existed merely as a dream of the imagination. A large and well qualified departmental lecture staff is at the service of the home-makers through the Institutes Branch. The results of college research and university culture are being placed at their service through the Extension courses, and the Government Departments, especially those of Agriculture, Education and Health. These find the Institutes one of the most effective channels through which to reach the whole people.

The officers of the first branch were:

Hon. President, Mrs Hoodless, Hamilton; President, Mrs. E. D. Smith, Winona; Secretary, Miss Nash, Stoney Creek.

There have been three Superintendents of the Institutes. Farmers' and Women's Branch; Mr. F. W. Hodson, Dr. George C. Creelman, and since 1904,

Mr. G. A. Putnam, under whose guidance there has been a steady expansion and development during the last eighteen years.

The idea has extended far beyond the bounds of Ontario now, the other eight provinces having also organized until there are Institutes from the Atlantic to the Pacific Ocean. Belgium, England, Scotland, Wales, Australia, New Zealand have followed suit, eagerly seeking information as to methods of work and results from Governmental Reports, Hand-books, and Bulletins issued from time to time, and from personal investigation of the branches themselves.

It is with humility, and a sense of serious responsibility therefore, that Ontarians, regarding agriculture as their basic industry, mothering as the greatest of sciences, and home-making as one of the most important professions, face towards the second quarter century in this work of nation building through an intelligent and increasingly scientific attention to the production and development of a high type of citizen.

THE EFFICIENT INSTITUTE

Mrs. Jas. E. McLennan, R.R. 2, Sarnia

There is no question but that our Women's Institute has become a mighty influence in the development of this rural Canada of ours. If it be true "that a nation cannot rise higher than her women," this organization composed entirely of women, who represent every part of our great Dominion, will display much discretion in taking stock from time to time, of their assets, of their liabilities, and of their resources, that Institute work may reach the very highest point in efficiency. District officers should make a real study of the whole situation, and by making a survey—taking an inventory—of their district, much may be accomplished.

If, as District Officers, you are to assist weaker branches, if you are to promote activity, if you are to direct the co-ordinating of branch effort, this is an absolute necessity. One of the first things to demand your attention will be the condition of the branches, and their membership. A falling off in the membership of any branch usually indicates inactivity.

Our assets are our branches, which must be pulsing with new life, and which must put forth green, vigorous growth each year, and in that growth every member should find that place in which she may best serve. Take stock of your numbers then, and if the year just closed did not see an increase, see to it that the next year shall. Arrange a membership campaign, aiming at a twenty-five to fifty per cent. increase, and go back ready to enthuse your branch. Plan that this shall go forth as one great effort, throughout the length of your district.

For your "meeting of survey" secure an auto road map, and after marking the location of each branch, just notice whether any part remains unorganized, for any locality which is still without a Women's Institute stands against us as a liability. Have the women of these communities any opportunity to become associated with educational libraries or lecture courses, to study health problems, or learn of food values? Do you hear anything of community, or rural improvement work? Is it not true that these things are not live issues, and their importance not even thought of or considered? We, who appreciate the benefits which come to us through our organization, and who know of the readiness of the Department to

provide service by way of demonstrators and lecturers should feel a personal responsibility in this extension work, that every rural home may be included. Search out possible new centres then, and plant young branches in every part of your district yet unoccupied, that they shall no longer appear as a liability against us, but enter our ranks as assets, having untold possibilities, and taking their place as a new force along all lines of aggressive work.

The efficient Institute must be ever pressing forward. Many lines of work and study may be taken up by the individual branch, while again, other lines may reach perfection and success, only by co-operative effort.

In the first instance after considering local conditions, the line of action can be readily decided upon. Demonstrations, and University Extension courses may be brought to the rural centres. But a veritable hive of industry our branches must be, if they are to put forth that green, live, vigorous growth each year. Let us discover the real requirement and need of our respective communities, and then seek to attain that end. A clear vision first, and then perseverance, will in every case win. Latent talent, undiscovered ability, lie all about us. Those before uninterested, will find a place in these new activities, leaders are only waiting to be pressed into service, for the resources of our branches are unbounded.

By co-operative effort, still greater problems may be solved. Our Women's Institute stands for advancement and improvement along every line, and especially is this true in regard to our schools and education. If the Government's "Medical Inspection Survey" has been completed in your district, what of the follow-up work? The responsibility for this seems naturally to fall upon the Women's Institute. That survey placed facts before us, conditions which we dare not ignore, conditions, which, as mothers and women, we cannot shun nor neglect. Let us use to it that Public Health Nurses, according to the regulations of the Department of Education, are placed over every school in our county.

Our rural people are truly awakening. New standards have arisen. Our whole world is changing. Even to-day comes a new message—disarmament, the banishment of war and all which it entails. Ideals of thirty and forty years ago have crumbled and fallen. Education which may have answered then, will no longer suffice.

We are told that fifty per cent. of the children of our land are found in farm homes. Of these, ninety per cent. in the past have not had access to our High Schools. Must our rural children continue being deprived of these opportunities? The remedy lies, we believe, in our Consolidated and Continuation Schools, fully equipped, and extending to their students two years at least, of High School work, and under certain conditions full matriculation courses. These, with the coming into effect of our new Adolescent School Act, greatly facilitate our problem. Our efficient Institute members may assist in this by moulding and developing public opinion, and educating our people along these more advanced lines.

We have entrusted to us, in our boys and girls, our future statesmen and leaders. Already our women are finding their place in our Administration Halls, and Canada is calling her women of the rural part to heavy responsibilities, for the Canada of yesterday is not to be the Canada of to-morrow. How shall we answer her call?

COMMUNITY RECREATION

Dr. Annie Ross, Macdonald Institute, Guelph.

To each of us recreation has, possibly, a different meaning. To one, recreation means a game of golf, to another it may mean a theatre or a quiet hour in the home, hence the subject is a broad one. But there is one thing of importance, and that is the danger of allowing our recreation to be commercialized by people who are giving us recreation just for the sake of the money they make out of it. You may find eighteen people playing a game of baseball and probably 1,800 or 18,000 paying to watch them play. That is a form of amusement, but not the best kind of recreation.

The Greeks had a splendid word in their system of education, the word "Proportion." We must introduce into our system of education, into our work and into our recreation more proportion—more play for the people who work too hard; but for the people who are spending their time seeking pleasure, more work. If you want to find people who are bored to death, do not go to the people who are working all the time, but to the people who are spending their lives seeking pleasure, for we must have things in proportion to enjoy them.

You are building your community halls for recreation but you cannot give people recreation that they do not want. You must understand people; find out what they want to play and say "let's play that." I am going to outline some of the principles that underlie our recreation. Some people say recreation is good for the health; so it is, but it is more than that. Again they tell us it is a preparation for life. That is true. They tell us that it is one of our mental stimulants, and that is true, but it is more than that. Recreation or play is an art in itself, just as music is an art. It is an instinct. I am going to talk of three or four instincts of the child in connection with recreation, for our play should be an expression of ourselves. Have you noticed the boy or girl when he goes to his first children's party, and the form of recreation he takes there. He gets a toy and holds it until he sees his next-door neighbor has another toy, and he immediately goes after that, and gets that one, also. His idea of recreation is to get everything for himself and not share up. The individualistic instinct is strong at this age, and the idea of play is to see everything for himself, to hear, to handle, to taste. Try to get him to play with other little members of the party, you are not successful. Trace that instinct of self-preservation in life, and you see that some of us grown-ups take our recreation in the same way. There are people whose idea of enjoyment is to see all they can see, to hear all they can hear, to taste everything. Their recreation is that of preception; in them the individualistic instinct is strong. This form of culture we spell with a "K."

Watch the child of two or three years hence, and the instinct that is strongest in him is imitation. His games are playing house—imitating mother and father; playing school, imitating the teacher; playing horse, playing church, and all through his play you will trace now the instinct to imitate. To make use of this educationally by having him play occupational games, e.g., "Carpenter," "Cobbler." etc. This wonderful instinct to imitate is expressed by the grown-up; e.g., in following fashions and customs; in the love of drama, etc.

A few years later, you will find in the child not only the instinct to imitate but in the instinct to compete. Listen to the boys talk as they come out of school; "I can run faster than he can," or "I can spell better than he can," or "I can beat him." Watch them wrestling and racing. Their games are full of rivalry; they

love to set traps for animals—not for the value of the animal but to rival his cunning. They love to catch fish—not for food value but just to catch them and get ahead of them. That is the competitive instinct. You hear them boasting of how they can "down" anyone, and the good teacher makes use of the competitive instinct in her classes, and gives them scope for competitions.

Then later still, they develop the social instinct, and you find then the boys are working in teams, they like to talk of "us fellows," and they love to get together in gangs and clubs and have pass-words that others know not. They will not snitch on the fellows of their Club; they will deny themselves and sacrifice themselves for the Club or the Team. This is the social instinct, and their games are social games and group games—games where they have to deny themselves for the sake of the group, games that are a wonderful preparation for life.

As an example of such a game, take baseball, for it is better known throughout our country than any other game. What can you get out of a game of baseball as a matter of training? For those who are just learning the game, it is hard for them to keep their eye on the ball. Yet it is a good thing to learn through life to "keep one's eye on the ball." There is always some one thing of vital importance; many people are off on tangents and overlook this important thing, forgetting to keep their eye on the ball. The next thing to learn is that the hand and the eye and the brain should operate to get quickness of response. It is this quickness of response the engineer must have when he sees an obstacle on the road, he must not stop to think what he is to do, he must do the right thing at once. The same quickness of response a person requires when driving a motor car—that co-operation of eye and hand and brain. Some young ladies when learning to play ball, when they do get the ball, wait until someone tells them what to do with it. The trained player uses her brain to think what to do with it when her chance comes, this implies co-operation. Baseball teaches more than that, it teaches how to take defeat graciously. They say that women cannot do that, that they know how to win but they cannot take defeat. Perhaps they did not play games as much when they were girls as the men did when they were boys. Women do not disagree more often than men, they take slights more to heart; they take themselves a little too seriously. The man in public life knows when he gets a slight to-day, he will get another to-morrow, and he has no time to sit and feel sorry for himself for the one he got to-day.

One of the nicest things in the game is to see the defeated side congratulate the other side: "You won this time, perhaps we will win the next time; we fought hard, so did you, but you were better than we." Let us take defeats graciously in the game of life.

There is something more in a game. One has to learn to take orders from one's captain, and that is a lesson very difficult for some people. Decide who shall be the captain, listen to his voice above all the din and rush of the game. There is one voice to hear—it may be an inner enthusiasm, or an outward devotion, but following it we are not drifting along with every chance current.

Then there is "play the game fair" for every game has rules, and the game of life should be played fair according to rules. In every game the rules inhibit. We need rules in life. We sometimes forget that in all our activities, there are two forces, there is the force that accelerates and the force that inhibits. When we trained for discipline, in the old days, we were training to inhibit—putting on the brakes. We need the brakes going down hill, but we need the accelerator going uphill. It is the same in life; there are always those two forces. There is not a

heart beat that is not governed by two nerves—one nerve saying "beat faster," and the other "beat slower," and hence we get proportion, because one regulatess the other.

One who has studied life says, "We need inhibiting in our revolt against authority" and "Play is too much relaxation, too much acceleration"—not at all. A game with rules means one must inhibit; there is just as much self-control in a game as there is work.

Richard Cabot says, "We are well organized for work; we are stupid in our affections, and we do not know how to play."

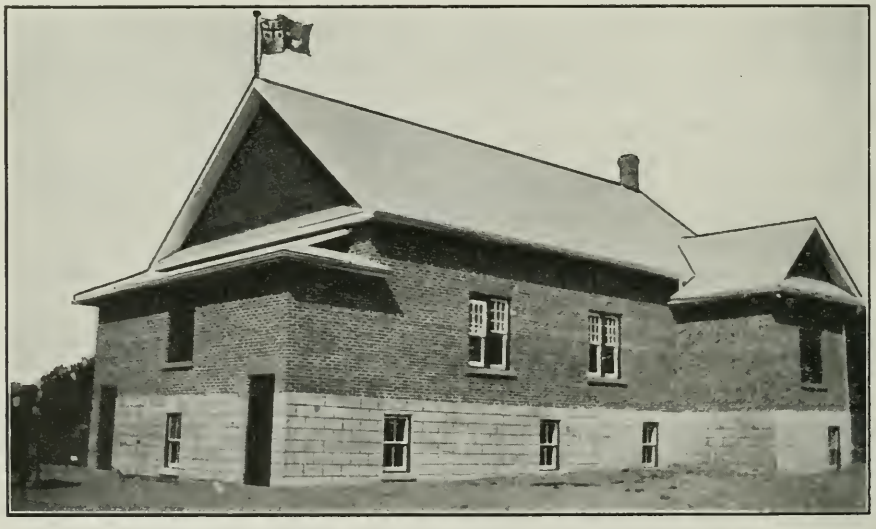
You ask for dramas for the girls in your community during the winter? That is very difficult to answer, for one that does not know your girls or your community; what one would appreciate another would not, but we have at the O.A.C. a list of plays with a short description of each. If you send to the College Library, they will be pleased to send the list.

A RURAL COMMUNITY HALL.

Ada Shepherd Walker, Eady.

Before I finish my story of how we got our Community Hall, it may seem that the Women's Institute did not do much after we got the Farmers' Club started to work. But we are their wives, and always and ever we kept them at it.

Our first meeting was held at a farm home in January of last year, not quite sixteen months ago, and a committee was formed, composed of members from



The Eady Community Hall, Simcoe County.

the Farmers' Club, the Women's Institute and a Young People's Club called "The Wake Up Club," now organized as a Junior U. F. O. This Committee drew up plans for the Hall, and arranged two Community Meetings at which the plans were discussed and altered a little. Also we settled on a method of financing the building.

Our plan for financing was first to raise what money we could by a subscription list; this brought us over $1,200. Then we planned to make some money at the celebration of the opening, and for the balance we had notes held by local men at "Victory Bond Interest." These notes were backed by thirty men in the community We value our Hall at $6,000 and we have now only $2,500 left to pay on it. A great deal of the labor was given free. The digging of the basement, done by the farmers, was valued at $166.50. The gravel that was given for cement work and grading the grounds was valued at $268.75. A quarter acre lot was given us. The plans were drawn by a local man and specifications were prepared at less than half price. The Building Committee gave their time, and lots of it, free.

The opening was a great success. At this we cleared $500, and had the pleasure of a visit from our District Institute officers, Mrs. Todd and Mrs. Stocking and from Mr. Staples of the Educational Department of the U.F.O. By serving meals at School Fairs and other means, the Institute raised enough money to buy chairs for the Hall—an extra donation of fifty dollars was also given us—to furnish dishes for refreshments, and to put a roof on the shed which the men had built. The Institute, the Farmer's Club and the Young People's Club each gave $30 to the upkeep of the Hall for the first year. It is under the control of a board of seven trustees, two from the Women's Institute, two from the Junior U.F.O., one from the Farmers' Club and two from the township Council.

Our basement is not finished yet, but we have wonderful plans for it—a gymnasium for the boys, manual training for the girls and a model kitchen. We had planned a nice, sound-proof, well-ventilated nursery for sleeping babies, but now we see we have made a mistake as the little mattresses on the cots would get damp between meeetings. We may build a nursery wing on the other side of the building to balance the dressing room.

We have had our Hall since last September and it has already given us much more than we put into it. The building of it has fused us into a unity which can accomplish almost anything in the way of community betterment. We have learned team play and community singing, and we know that our community centre is going to help to keep our young people in the country where we want them.

CHILDREN'S READING

Miss Lilian Smith, Superintendent of Children's Department,

Toronto Public Libraries

It has been said that the books that a boy or girl reads for pleasure before the age of sixteen do more to form his ideals and mold his character than all the text books that he reads in schools. There was a time when children were brought up among a few strong books, the impress of which was clearly seen in the power of their lives, but to-day we find rapidly changing conditions. Modern children are thrown almost from babyhood into the ceaseless rush outside of the home. They are exposed to weak and bad companionship, to the exciting pleasures of the street, they are exposed to influences of low and vulgar picture shows and billposters, and to the dangers of five and ten cent novels. The book market is flooded at present with weak and vicious fiction, and it is hardly possible for children, in the city especially, to grow up without some knowledge of this kind of literature. Boys and

girls will read something, and if you do not provide them with wholesome and intelligent literature, the boys will subsist on dime and nickle novels, and the girls will read silly sensational love stories.

Children must help in selecting their books, and to meet this need, children's rooms have been opened in the libraries all through the country. These children's rooms, in charge of a children's librarian, prepare boys and girls to make an intelligent use of the adult department, to develop their literary tastes through the medium of books and through the influence of the children's librarian, and they help to train the boys and girls in good citizenship. The chief concern of a children's librarian is to make good books available to all the boys and girls of the community. In doing this sufficient variety must be provided to meet the need of the boys and girls from the picture-book age to that time which cannot be measured in years or school-grade, but which was typified by one girl who, when she was asked by the librarian if she had liked "Rebecca of Sunnybrook Farm," replied, "Well, it is not the kind of book you would like yourself, is it?" And when it was answered in the affirmative, said, "Well, you see, it is this way: children have their little troubles, and grown-ups have their big troubles, and I guess it is the big troubles that interest me."

In choosing books for boys and girls, whether for the library or for the home, we have to buy the worth-while books first. We cannot buy everything, and we must buy the best. Our children can grow up without Henty, but they cannot grow up and they must not grow up without the classics of myth and fable and legend.

We had an instance of that not long ago when a high school boy came in and was returning a copy of "Greek Heroes." He said he felt he had been cheated because he was reading it for the first at an age when he could not possibly get the pleasure out of it that he would, had he read it as a child. So much of the enjoyment of later reading is lost if the children in their childhood have not had Æsop and King Arthur, the Wonder Book, Gulliver, Robinson Crusoe and Seigfried, and other stories of like nature. We cannot afford to leave out the best of the fairy tales of Anderson, Grimm, nor the stories of George Macdonald, Charles and Mary Lamb, and the children must have that illustrious and most complete book of collective poetry for children, Burton Stevenson's "Home Book of Verse for Little Folks." Canadian and English geography and travel must be looked after and replenished, and more discrimination used in choosing nature-study stories for children. Most of the books on nature-study are written down for children. One boy put it, "The nature-study you get in books is the most disinteresting subject there is."

Classics and standards that boys and girls will read in attractive editions should be provided so that when they get into the adult department, they will know what good novels are, and it goes without saying that the librarian or the parent must be familiar with them herself if she is to know how to use them intelligently.

We have to squarely face the fact that when we include the cheap or mediocre books for children, even though they are demanded by the children, principally because they do not know any better, we shut out books that we honestly admit are better, and the argument that "It may be poison but the children like it and it is cheap," looks pretty thin when we consider our responsibility of putting good books in the hands of the children of the community.

In our libraries we like the boys and girls to feel at home from the minute that they sign the application card, and we consider the librarian's desk a good

place to impress on new members their obligations toward public property and toward the proper use of the room. On our children's application cards is this written: "When I write my name on this card, I promise to take good care of the books I use in the library and at home, and to obey the rules of the library." I asked one of our little Jewish cousins if he understood what that meant, and he answered, "It means to wash your hands always before you read a book, and not to let my baby tear it."

A very small girl stood for a long time in front of our picture book and fairy-tale shelf; finally she turned to the librarian and said in a disconsolate tone, "The Three Bears and Golden Goose are never in, and there is so little else that is good." Little children know so little about books. Without direction, they will re-read the old fables or pick out something at random that is likely as not to be unsuited to what they want. Little children, and the older children too, need direction and help in their reading. It is just as unwise to allow children to choose their own books as it is to allow them to choose what they shall eat, and what normal boy would put aside pie and candy and cake for wholewheat bread? Children's taste in books is not any more of a safe guide than their taste in food. This has been proved over and over again in our children's rooms by the heart-breaking number of requests for Alger and Ryder Haggard's sensational stories, and yet thousands upon thousands of these books are sold for the children every Christmas.

In books as in real life it is impossible to keep children always in stimulating society, but with a little effort they can be kept from the common and vulgar and from forming a taste for the mediocre story book and the sensational novel. The information and taste acquired by children who read the best books that have been published for children in the last twenty-five years or so is perfectly amazing. It has proved that the most interesting material we deal with in our libraries is human nature, and that is more vital when we catch it young.

TRAVELLING LIBRARIES

The Department of Education, in its Public Libraries Branch, maintains a Travelling Libraries Section. The object of the libraries is to serve, first, the sparsely settled districts of the province and secondly, Women's Institutes, Farmers' Clubs, newly established public libraries in rural districts and villages, and communities where public libraries are in the course of establishment.

The travelling libraries at their best can only give a limited service. They are not intended to do for a community what it should do for itself. Every well-settled district is expected to make use of the Public Libraries Act and organize a small public library of its own. The Women's Institutes have been of inestimable service in organizing libraries and in improving and strengthening those already established. Applicants in the older and more settled parts of the Province should have in view the establishing of local libraries of their own, using the travelling libraries as an introduction and beginning. Ontario has 450 public libraries, the great majority being in villages and rural districts and it is to be hoped that all the settled sections will have public libraries.

THE BOOKS. The travelling libraries collection of books contains about 30,000 volumes, representing 6,000 titles. It is quite obvious from the small size of the collection, and from the consideration of the primary object of the libraries, that the books are largely of the kind that are adapted to the needs of the general reader.

The Government's Travelling Libraries may be sent to the remotest Women's Institute in the Province.

There are very special classes of books suited to the needs of special students. There are times, however, when a special case may be made up, and the office is always pleased to learn of special needs from an applicant. Agriculture, household science, travel, matters pertaining to Canada, and children's literature are examples of the classes of books that can usually be sent in numbers.

No catalogue is published for practical reasons. New books are being purchased every month, worn-out volumes are withdrawn, and two-thirds of the collection is always in circulation throughout the Province. An applicant should state in general terms the kind of books wanted, and the librarian will do the best possible to make up a satisfactory selection. The great majority borrow a "general case" which consists of forty per cent. in the classes Travel, Biography, History, Agriculture, Household Science, Fine Arts, Literature; one-third Fiction, and the remainder, books for children. The following books with some twenty others were noticed in one sample collection:

"The Making of Personality," Bliss Carman; "Plain Tales from the Hills," Kipling; "The Top of the World," Dell; "Astoria," Irving; "English Men of Letters"; "England After the War," Frank Dilmot; "Through St. Dunstan's to Light"; "The Secret Trails," Chas. G. D. Roberts; "Canadian Birds;" "Across the Sub Arctics of Canada;" "Rhymes of a Red Cross Man," Service; "A Wanderer in Holland," "Middlemarch," George Eliot; "David Copperfield," Dickens; "The Road to Understanding," Eleanor H. Porter; "Rod of the Lone Patrol," Cody; "The Adventures of Jimmy Dale," Packard; "New Chronicles of Rebecca," Kate Douglas Wiggin; "Burree Son of Kazan," Curwood; "The Girl of the Mirror," Jordan; "Green Tree Mystery," Doubleday; "Red Cap Adventures," S. R. Crockett; "With Jellicoe in the North Sea;" "Hero Stories of France;" "Famous Sisters of Great Men;" "The Luckiest Girl in the School;" "Peeps at Many Lands;" "Boy Scouts in the Wilderness;" "When Canada was New France;" "Robinson Crusoe," "Gulliver's Travels;" "Man and His Work;" "365 Dinner Dishes;" "Stitchery." A number of the books were of modern fiction and juvenile reading. Practically all the books in a general case are suited to the general reader; they are interesting and attractive and not often of a heavy cast. Occasionally a request is made for a case of Fiction. Such applications can not be filled. The libraries are chiefly for educational purposes.

Number Loaned. A case holds from 40 to 60 volumes.

Loans Free. No charge is made for a loan.

Express Charges. The borrowing community is asked to pay the express charges going, and the Department will pay for the return trip.

Period of Loan. The regular period of a loan is for six months, but a case may be exchanged at the end of a shorter period, or, the period may be extended through application by letter, provided that the case is not required.

Applications. All applications are filled in the order in which they are received. There are no delays except when the demands exceed the number of cases and books on hand.

The Department prefers to loan through an organized association of some kind; and the books must be open for community service and not only to members of an association, club or church.

An association wanting a travelling library should write to the Inspector of Public Libraries, Department of Education, Parliament Buildings, Toronto,

asking for an application form. The President, Secretary and the proposed custodian of the books should sign the form. The shipping point should be clearly indicated.

Signatures should be written legibly and should state whether "Mrs." "Miss," or "Mr."

Register. A register is enclosed in every travelling library case. This must be entered up according to the instructions printed on the cover and returned with the case.

Public Libraries. There are numerous books both for adults and children that should always be available for use in every community. Travelling libraries will never take the place of a permanent collection of books. A fair-sized collection of the best of the world's literature should be at all times within the reach of every person in every community. The Public Libraries Act provides that any community from a rural school section to a large city may establish and maintain a free public library. For communities where only a minority favor the maintaining of a library, a type of association library is provided by which a group of members may establish and support a small library. Annual grants are given to all libraries qualifying for them.

Information and advice on the establishment of a local public library may be had by applying to the Inspector of Public Libraries, Department of Education, Parliament Buildings, Toronto.

UNIVERSITY EXTENSION SERVICE

"People are beginning to realize that the University is here to serve the province," said Mr. Dunlop, director of Extension Service for the University of Toronto. "There is a growing demand for more education. Parents want it for their children and adults want it for themselves. The desire for utilitarian education has resulted in the establishment of technical schools throughout the towns and cities; the demand for cultural education is where the university comes in." Some of the extension work outlined was the correspondence courses for teachers or other students and the night schools held in several centres where teachers were taking their arts course extramurally and the series of lectures to workingmen on such subjects as English Literature, psychology, and economics. It is rather noticeable that hard-working people crave this cultural training rather than more technical study along the lines of their own work. This was particularly evident when the United Farmers' planned their two weeks' course at the university last winter.

This short course at the university includes lectures in economics, English literature, Canadian history, architecture, public speaking, commercial geography and a few other subjects are to be added. They thought they might possibly get one hundred pupils, but when they come there were two hundred and seven-nine of them, including three grandmothers, two grandfathers, some children just nicely in their teens, and a great body of young people around the ages from twenty to thirty. They seemed to have a remarkably good time. The course this year will run from February 6th to 18th. Any person who would like two weeks' of combined holiday and mental improvement would be well advised to attend.

Then there are the lectures sent out to local organizations, which should be of special interest to the institutes. Last year the Home Demonstrator for Peel county came to us to see what we could do for the young people in the country and

we decided to try out a course with the junior institute and the junior farmers in Streetsville. It was a most encouraging sign that they asked for English literature. Throughout the winter the enthusiasm never lagged. The lecturer went out every Monday evening and came back the next morning, the entire cost to the class being about $2, with a little extra for books. This year Miss McIntosh came back to us again asking for three courses, one for Streetsville, one for Brampton, and one for Cheltenham." Women's Institutes, girls and junior farmers' clubs, literary or church societies would find these courses well worth considering as a part of their programme this winter.

MACDONALD INSTITUTE SERVICES

At the convention at London in 1921, Miss McNally of the Macdonald Institute staff, gave an address on Institute Demonstrations and Projects.

A demonstration should be followed up by a project. An institute might have medical inspection in a school to demonstrate that a number of children were suffering from malnutrition, but such a demonstration should be followed by a project to overcome the condition, such as courses for mothers in the health care of children. Domestic science training for school girls was often ineffective, because a girl at the high school age was rather difficult to interest in infant feeding or under-nourished school children. Ten years later when she had children of her own she would be hungry for just this information. Miss McNally spoke of an item in the report of the Women's Institutes convention in 1915 when they had resolved to request the government to furnish "women district representatives" for the province; and she dwelt on the educational service such an office could bring to the women of the province. This work, up to the present, is being done in only one county, Peel, under the name of Home Demonstration Work.

The big project which Miss McNally set before the institutes was "to develop every home into an institution which is economically sound, mechanically convenient, physically healthful, morally wholesome, mentally stimulating, spiritually inspiring, socially responsible, a centre of unselfish love."

Macdonald Institute is also giving valuable help to the Women's Institutes of the future, by having special training classes in institute work for some of their students.

THE LOAN COLLECTION LIBRARY.

Perhaps the women of Ontario do not realize just what service the college has to offer them through its Loan Collection Library. Some years ago a library of articles clipped from magazines and bulletins, was established at the college as a feature of extension service for the province. It has been growing ever since until now it covers practically every field of general interest. It is not the purpose of this library to send out "ready made" papers to institute members, but if a member desires help in preparing a paper and will write asking for help on the particular subject, the library will send her material from which she can gather valuable information. All requests should be addressed to "The Library, Ontario Agricultural College, Guelph." The borrower may keep the material for two weeks, then it must be returned to the library in good condition. It is also important to write for material two weeks before it is actually necessary to have it, in case it may be out at the time.

Macdonald Institute takes charge of all inquiries on Home Economic questions. This section includes Foods, their Preparation and Composition; Nutrition, Diet in Health, in Disease, in Infancy; The Home and Social Questions: House Planning, Furnishing, Housekeeping, Labor Saving and Water Supply; Household Economics—Budgeting, Scheduling of Work; Household Art—Dyeing, Laundering, Arts and Crafts; and Home Economics Education. The one division on Foods is subdivided alphabetically, containing a number of articles under each of the heads: Beverages, Breadmaking, Buttermaking, Cakemaking, Candymaking, Cereals, Cheese, Desserts, Eggs, Frozen Dishes, Festivals, Fruit, Fish, Meat, Made-over Dishes, Milk, Marketing, Nuts, Pastry, Pickles, Picnics, Poultry ,Preserving, Quantities, Salads, Sandwiches, Sauces, Soups, Service, Storage, Vegetables.

The general collection, apart from Home Economics, is handled separately, the librarian frequently making use of the College Reference Library in answering inquiries, and at all times getting the assistance of the college staff in replying to questions on specialized agriculture. Some idea of the scope of the collection of articles on hand may be gathered from a review of some of the articles listed under the C's: The Cabinet; California Fruit Growers' Exchange; Camouflage; Camping; Canada (historical and geographical articles); Canada a Land of Opportunity; Canada and the War; Canadian Industries; Canadian Men of Note; Canadian (Navy, Art, Club, Literature, Orators, Poets, Writers); Canning; Carelessness; Carnegie; Caruso; Cattle; Character; Cheerfulness; Cheese; Children—the Training of (some twenty pamphlets); Child Welfare Work; China; Christmas, (A number of pamphlets including Decoration, Legends, origin of, Entertainments); Christianity; Church Union; Cigarettes; Citizenship; Civics; Civilization; Clearing Land; Clothing; Clubs. (Boys' and Girls', Farmers', Women's); Cold Frames; College Girls; Community (Building, Centres, Kitchens, Laundries, Life, Singing); Concrete; Consolidation of Schools; Contentment; Conundrums; Co-operative Agriculture; Cost of Living; Country Homes; Country Church; Country Life vs. City Life; Courtesy; Cow-Testing; Crime; Cultivation; Curie, Madame; Crosby, Fanny; Currants. This indicates in some degree the variety and completeness of a library with a similar collection under each of the twenty-six letters of the alphabet.

PROGRAMME PLANNING

Miss Emily J. Guest, Toronto.

Tributes coming from many sources, some of them outside our own country, testify to the value of the work accomplished by the Women's Institutes.

It is Ontario's gift to the world—the gift of a great idea—that of a working partnership between homemakers and Government. This partnership lays the foundation for scientific nation-building, a matter which is of prime importance to a young country.

In taking big, nation-wide views, there is danger of drifting towards the doing of things that are not so big nor so important as the national business of homemaking. Institutes are a home-building and nation-building organization before everything else.

The underlying principle of Institute endeavor is *co-operation*. Institute officers, keep that steadily before yourselves and the Institutes. Most troubles

and failures arise from a departure from this basic principle of action. Keep also clearly in mind the objects of branch and district work; better homes, healthy efficient people; a better community; a better and happier social life, and a better and more scientific agriculture. The key note of success in the Branch Institute is Programme Planning. The Board of Directors of the Branch will find this one of their chief and most interesting duties. *First find out what the members want,* and what they have to contribute, then arrange a programme. There are various ways of doing this, partly by suggestion, partly by inquiry; by roll calls, by the Suggestion Box, and a very good method, by devoting half an hour at the April or October meeting or both, to discussion and suggestion of items.

Of these suggestions the secretary keeps a record for the assistance of the committee in mapping out an attractive, well-balanced programme for the ensuing six months of the year.

Aim to have the Programme

1. Seasonable.
2. Balanced; i.e. (a) an address or paper (b) a demonstration or exhibit with discussion following, (c) and, if possible, a social half hour at the end, in all not more than two hours.
3. Cover the interests of all in the home.
4. Draw out as much local talent as possible.
5. Have as many members as possible taking part.
6. Interest both girls and women.
7. Be progressive from year to year.
8. Consider community interests.
9. Deal with a few lines exhaustively and do not aim to cover too wide a field.

The Study of the Home—may be encouraged by the president and committee drawing from the members suggestions as to what they would like taken up at the monthly meetings under such heads as:

Food, clothing, housing, furnishing, cleaning, labor-saving, health.

The Study of the people in the Home—under sub-heads such as:

The family, education, friends, division of work, financial arrangements, play and recreation, music, reading, manners, speech.

The Study of the Community—along such lines as:

Civics, the schools, community health, community recreation, community beauty, neatness, and progressiveness, school fairs, naming and beautifying country homes, cleaning and improving roadsides, parks, cemeteries; short courses, community halls.

Keep the Programme Balanced.

When the list of suggestions is complete, it may conveniently be arranged into three divisions: 1, those topics which can best be dealt with in papers and addresses; 2, those which require to be seen or done, i.e. exhibits or demonstrations; 3, those in which a number or all of the members take part, as roll calls, discussions, debates, spelling matches, games, community singing, the social half hour.

From these three columns an attractive, well-balanced programme can be arranged to suit the season and the tastes of the majority, keeping in mind that the programme is not solely for those of literary tastes, the practical minded, the mothers, nor the girls, but "for the equal good of all."

Each month's programme should be so planned as to contain features one or other of which should interest every member. For example where there is a paper

or address, there should also be a demonstration or exhibit bearing on practical matters. Many people learn more from seeing than from hearing. Nor should the social half hour be neglected. The social mind needs to be developed in the country. There must be friendliness and sympathy to ensure co-operation.

Have as Many as Possible take Part.

This is good for the Institute and good for the members. It may be done by getting the members to take their turn in acting as hostesses for the social hour, in responding to roll calls, taking part in the discussion contributing to demonstrations or exhibits, and by deciding by ballot vote of all present when judging for prizes. Besides this, each should, of course, contribute what she can in the way of papers, talks, or demonstrations to the programme; also, as far as possible, each should take her turn at acting on the branch Board of Directors.

Competitions, Notice Boards, Suggestion Boxes.

In some places the Institute principle of co-operation is being worked to a logical conclusion by encouraging competitions for standards in excellence rather than the old idea of competition against persons for 1st, 2nd and 3rd prizes.

For instance, all competitors who made, say 95 out of a possible 100 points, would be considered as 1st prize winners, of 85 to 95 second, and of 75 to 85 third. This method has the virtue of raising the general standard of achievement in the community and of doing away very largely with the rivalries and jealousies of personal competitions.

An Institute notice board placed up in a store, post office or other frequented centre, on which items of interest and forthcoming events are posted, has been found to work well in some branches.

A permanent Suggestion Box at each meeting into which members may drop ideas and suggestions has been found a helpful feature also. This might be put in special charge of one of the directors or vice-presidents.

Let Your Light Shine.

Send your programme to the papers and write up bright newsy accounts for the local press; also for the Department. Where possible appoint a press representative from the membership to give particular atteniton to this important part of the work. Good papers, recitations, plays which have been given at Institute meetings successfully, accounts of demonstrations, exhibits, and copies of programmes are always welcome at Headquarters as they can be passed on for the assistance of other branches.

(For detailed list of subjects suggested for programmes, see revised edition of the Hand Book).

GIRLS' INSTITUTES

The Girls' Istitutes continue to be one of the interesting features of the general Institute organization, the girl membership carrying on their activities in various ways.

Where the numbers are small, they usually carry on as an active part of the Women's Branch, receiving special consideration when the programme is being planned and carried out. In this case it is wise to elect a girl to the Board of Directors of the Branch to represent the girls and their views.

Again they form a Girls' Circle within the Branch which is in such cases responsible for all of some meetings or some of each, also having its own Chair-

man who is a member of the Executive. The officers and committees may be the same as for a regular Women's Institute.

Where there are a considerable number of girls brought together by such interests as one of the Short Courses, they frequently decide to organize a Junior Institute, still co-operating closely with the Women's Institute, if there is one, but planning and carrying on their work and meetings and receiving similar help from the Department.

Besides the regular study of better and more scientific home-making, community matters are given consideration—the hospitals, schools, libraries and recreation.

For the hospitals, the Branch undertakes plain sewing of such kinds that the younger girl can take her share in it. In some cases at least one complete infant's layette, cradle included, is made during the year. An interesting feature of this is often a demonstration by a trained nurse in the bathing and dressing of a baby.

Short Courses by Departmental demonstrators remain popular. These are often carried on at the same time as the the men's course in Agriculture, the two organizations uniting for a weekly literary afternoon and concluding with a joint banquet.

One county followed this up by selecting a team of four, captain and three others, from each Branch in the county, to put on a Canning contest at the Fall Fair. Each of these teams held one practice a week for two months preceding the Fair at which this competition proved one of the most attractive events. The prizes given were trips to one or other of Ontario's leading cities for the winning teams, or canning outfits for the home.

The Girls' Institutes are also showing an active friendly interest in the schools, visiting them and the teacher, giving prizes to the School Fairs, encouraging the literary societies, and doing what they can generally to aid in getting better, cleaner, more beautiful schools and grounds.

Play has, of course, had its legitimate place. Co-operation with the seniors has resulted in provision for Tennis, Basket-Ball, and Volley Ball, in connection with the Community Hall grounds. In some cases the Juniors have helped in the decoration of these halls. At the indoor gatherings, essays, discussions, debates, music, contests and games are features. One young President sums up the ideals actuating the girls as follows: "No dancing or card playing is allowed at these meetings because we want *everybody* to come and *everybody* to feel satisfied and happy. Everbody is given a chance to display her talent in writing, editorials, poems, or humor. One evening a month we study Shakespeare. Our meetings are always properly chaperoned and we close not later than 10.30 p.m."

Another Branch planned their two hours' meeting giving the first hour to serious work—papers and discussions, and the second to recreation—choruses instrumental music, tableaux, physical culture and athletic games.

Still another gives a meeting to each of the following in rotation: 1. Horticulture, agriculture, and out-of-door matters; 2. Literary and educational topics; 3. Practical and ideal home making; 4. Social.

It is expected that all social gatherings of Junior Institutes shall be properly chaperoned and close at a reasonably early hour.

FEATURES OF SPECIAL INTEREST FROM THE GIRLS' PROGRAMME.

Educational:

Some of the special studies on educational lines have been parliamentary law and procedure; How we are governed; The laws of Ontario; The laws of health and beauty; English and Canadian literature; Public speaking.

Home Craft:

As the majority of girls are looking forward to having homes of their own, one of the primary aims of the clubs is to prepare them better to fulfil this mission.

Demonstrations:

Paste board box demonstrations:—

1. A model new house.
2. A remodelled old house.
3. A farm house furnished for beauty, comfort, economy of money and the housekeeper's energy.

Table setting and serving.

Parades:—Home made blouses, skirts, hats, aprons, dust-caps.

Study Problems:

How best could our house be remodelled.

Understanding and caring for the human body.

What should a human being weigh, measure, and be fed at the different stages of development between birth and the age of eighteen.

Dressing for health and beauty on the average girl's income.

Good form,—in the home, travelling, and public places.

Income Earning Features:

Making and marketing of milk products, butter, cheeses.

Possibilities of the garden: flowers, bulbs, vegetables, fruit.

Conserved food: canning, preserving, standardizing the pack, getting it on the market.

Poultry: breeds, management; how to dress fowls for market; how to pack and ship them; how to grade and ship eggs.

Selling breeders and eggs for setting.

Bees: care and management; shipping and marketing honey.

Sewing: making, mending, remodelling for busy mothers and others.

Recreation:

Out of doors: Bird hikes.

Horseback Riding.
Tennis.
Basket Ball.
Volley Ball.
Nutting.
Woodland lore.
Swimming.
Skating.
Snow Shoeing.

Corn roasts and story telling around the camp fire.

Indoor:

Story-writing.
Spelling matches.
Folk games.
Choral singing.
Physical culture.
Dramatics.
Debates.
One-minute speeches.
Story-telling.

Helps for Junior Institutes:

The Girls' Travelling Library.
The Departmental Short Courses in Sewing, Millinery, Domestic Science, First Aid and Home Nursing.
The University Extension.
The Packet Loan Library, Macdonald Institute, Guelph.

TRAINING THE CANADIAN GIRL.

Mrs. Jean Muldrew.

Mrs. Muldrew began by thanking the girls and women of the district, who had helped her in her work with the Soldier Settlers' families. Many girls' clubs as well as women's institutes had sent bales of children's clothing and hand-knit stockings and not a few girls' institutes had made layettes. But the speaker treated the possibilities of the girl in a sphere far wider than the limits of her hand-work. The opportunity given to woman in giving her the vote has made the girl a force to be reckoned with. The greatest asset and hope of Canada lies in the young men and women who will in a few years guide the destinies of her municipalities and governments. Time had developed a striking contrast between the mid-Victorian girl and the girl of to-day. The girl of fifty years ago fainted very easily, she was employed only in doing lady-like things, she was most often seen sitting demurely at a window working at some delicate piece of fancy-work. The heroine of the modern novel was most likely to be engaged in sports, driving a motor-car or doing other unladylike things, but on the whole the change had been in the direction of progress. Even the war had brought about important reforms in things most vitally affecting women. It had brought about a new public viewpoint on the value of human life. When the war laid low fifty thousand men, Canada saw that she must try to make up this loss by saving the children she had and toward that end a Department of Child Welfare was established at Ottawa. At the same time children are being lost because no man would attempt to care for live stock with as little training as most young men and women have when they begin to bring up children. This should be one of the most important features of the girl's education.

Nothing in after life can ever make up for mistakes in home training. Clever, capable mothers often have poor daughters and people wonder why. We learn the secret sometimes when we hear the mother say, "I've done everything for that girl since she was a baby, and she's as selfish as she can be!" Don't make yourself a door-mat for your children or they'll wipe their feet on you. Another mistake mothers often make is that they are not critical of their own children. If we would be more critical of faults in their early stages we would not have to excuse them later on. Be very critical in your heart and kindly with your tongue in dealing with your children's shortcomings.

The speaker emphasized the importance of training girls early in habits of helpfulness, industry and precision. In her experience teaching girls of sixteen and eighteen she found that very few had acquired habits of concentration and accuracy. In a study period of an hour and a half, they would put in about seven minutes' real work; the rest of the time would be given to a discussion of the movies, a new dress, every boy they ever knew or ever wanted to know. Also few of them knew the value of money. They had never been taught to plan

and spend wisely and economically. A great deal could be accomplished even along these lines if the girl had the right ideal set before her. A girl is, by nature, a hero-worshipper—she is always copying some older woman; a mother must be very careful of the example she sets. The right happy condition of affairs exists when the girl's own mother is her ideal, and the mother will go a long way to bringing this about when she recognizes that a girl is very keen on outward appearance—she likes to see her mother dressed up. She will soon learn, of course, that there are other things deeper than outward appearance, but it makes the first impression.

Girls' clubs offered another valuable channel for the girl's education. A balanced club programme should include something to do, something to say, some idea to develop. The things to do should take in sports and team games, for the sake of both their physical and ethical training. Canning teams also develop the co-operative spirit. Basketball is an excellent training in ethics; it develops leadership, and teaches a girl to take her knocks and to take defeat cheerfully. A girls' club should provide for amateur theatricals—the desire for expression is strong in every girl and nothing satisfies this so well as an opportunity to take part in the drama herself. We also need more music and movement to music. The speaker deplored the fact that our young people are finding their entertainment in dance-halls and cabarets, but she believed that if the women of Canada had been ready at the close of the war to open their homes and invite the young people to dance there they would not have to worry about the dance-halls now. "We danced just as much thirty years ago," she said, "but we danced in our mothers' kitchens." She also emphasized the importance of the teaching of good manners. Nothing else pays so well as knowing "the right thing."

Mrs. Muldrew advocated the teaching of handicrafts in girls' clubs. An experiment proving the cultural value of hand work had been tried, she said, by taking a number of backward pupils from a school and putting them in a separate class where the morning was given to regular school work and the afternoon to hand work. At the end of the term these children tried the same examinations as the children from the ordinary schools and eighty-five per cent. of them passed. Such a record from pupils who are considered rather backward goes to show what hand work might do for all children. In their clubs the girls could take up handicrafts that could be turned into money and so provide them with a means of earning at least their pin-money without leaving the rural homes and communities that need them so much. Canning clubs in the United States started many girls growing and canning fruit and vegetables for sale. Perhaps the Institute could help to create a market for such things as salad-dressings, soup mixtures, vinegar and braided rugs. A soldier in the West made a thousand dollars in one year from gooseberries. There seems no reason why girls could not do something along this line on the farms of Ontario.

And along with all this, every girl should have some vocational training by which she can earn a living. The best possible opportunities to-day seem to lie in the profession of home economics. And in all our training of the Canadian girl we must keep in mind that the home is at the root of the national life, and at the foundation of the home stands the Canadian girl. No work which the Institute can undertake will reap greater results than an effort to develop the finest type of young Canadian womanhood.

PLAN OF ORGANIZATION OF WOMEN'S INSTITUTES

A Branch Women's Institute may be organized in any locality, (city, town, village or township,) where a sufficient number of girls and women undertake to meet from month to month to consider questions of general interest in the home and immediate community.

Organization may be undertaken at a meeting called by the officers of the District Women's Institute, by the head of the municipality, or by any five women of the district concerned. At least ten days notice of the meeting shall be given by advertising in a local paper or papers, by placard, or by announcements mailed to householders as given in voters' lists, in which shall be stated object, time and place of meeting. Detailed directions for organizing an institute are given in the Hand Book.

It has been the custom of the Department from the beginning of the Women's Institute Work to consult with the branch and district officers, lecturers and instructors sent out by the Department in determining upon the programme of activity and methods of administration.

While the Institutes of Ontario have been assisted and encouraged by the Department of Agriculture from the beginning and the closest co-operation exists, each branch has been free to arrange its own programme and conduct its work quite independently of the Department. The Institutes themselves have agreed with the Department that anything of controversial, partisan or sectarian character should be kept out of the Institutes. When instructors provided by the Government are in attendance at a meeting the time should be devoted to educational work. It must not be inferred from the above that the Institutes have not been discussing questions of the day, for they have given considerable study and time to laws relating to women and children, education and health policies and administration, and methods in Municipal and Provincial Government.

HOW TO CONDUCT A MEETING

The President shall preside at all meetings. In the absence of the President, one of the Vice-presidents shall preside. In the absence of all, those present shall elect a chairman for the meeting. In the absence of the Secretary, the President shall name some person to act in her place, or ask the meeting to do so.

The usual procedure for a regular meeting is as follows:

1. Opening exercises.
2. Roll call.
3. Reading and approval of minutes of last meeting.
4. Unfinished business and discussion of business arising out of minutes.
5. Reports of committees and discussion of same.
6. Correspondence relating to the Institute, read by the secretary, and discussion of business arising out of same.
7. New business
8. Programme for the day.
9. Adjournment.

After the minutes of the last meeting have been read by the Secretary, it is usual for the President to say, "You have heard the minutes. Are there any corrections or amendments?" If there are none, she says, "I declare the minutes approved as read." If there are, she says, "I declare the minutes approved as amended and corrected." The President should at once sign the minutes, or do so at the close of the meeting.

If the meeting is a special meeting, it will not be necessary to read the minutes of the preceding regular meeting, except as they affect the special meeting.

The report of a committee should be presented by the chairman, secretary or some other member of the committee, and there should always be a motion for the adoption of the report.

No item of business should be discussed until there is a motion on the subject before the meeting.

There should be only one motion before a meeting, at one time, unless it is a motion to amend.

When a motion has been made by a member, either in connection with unfinished business or new business, the President should read or cause to be read, each motion as it is introduced, and should then ask: "Is there any discussion?" Before proceeding to vote she should read again the motion, and then ask, "Are you ready for the question?" She then says: "All in favor of the motion will signify by holding up the right hand." The vote is counted. She proceeds: "Those opposed will signify in the same manner." The vote is counted. She should then declare the result.

It is desirable that nominations be by ballot. When nominations are by motion, it is not necessary that the nomination be seconded.

Elections should always be by ballot, unless it is unanimously agreed by those in attendance to vote by show of hands, or by standing.

A vote by ballot is usually according to the wish of the majority of those present at the meeting, unless there is a clause in the By-laws to the effect that ballot should always be used.

When voting by ballot, there should be at least two scrutineers appointed by the chairman to collect the ballots and count the same. All uncertain ballots should be thrown out. A member should not be a scrutineer if her name is on the list of nominees.

If the majority of the members present at a meeting do not wish to take the vote on any particular matter at the meeting, the vote may be left over until the following meeting.

The amendment to a motion takes precedence of the main motion. Amendments may be made by (1) adding words (2) striking out words (3) striking out words and inserting others. The amendment is voted on before the main motion. Both the motion and the amendment should be read before proceeding to vote. If an amendment is lost, the main motion is then presented. If the amendment is carried, the main motion with the amendment so made is voted upon. The business of a meeting cannot be conducted unless there is a quorum.

A member wishing to address the meeting, or speak to a motion, should arise and should address the chair as "Madam President" or "Madam Chairman." She is not permitted to speak twice to the one motion, but may ask permission to speak again in explanation of something said in her former speech. If she has spoken to a motion she is thereby not in a position to speak to an amendment.

The Secretary may make a motion if she so desires, although this is not usual; and she may cast her vote with the other members.

The chairman may vote, although this is not usual, unless her vote is necessary to make a majority in any vote. She is not entitled to make a motion but may suggest that some other person do so.

It is the duty of the chairman to keep order in the meeting.

It is much easier to have the business of a meeting conducted in an orderly and parliamentary manner. Speak in order and have a time limit for all speakers and see to it that the same members do not do all the talking.

BOOKS RECOMMENDED FOR USE OF WOMEN'S INSTITUTES

A more complete list will be furnished on application.

The prices given are subject to change.

Institutes are advised to purchase through their local dealers. If this is not convenient, orders may be placed with the "Students' Supply Department Store," O.A.C., Guelph. Orders sent to the Women's Institute Branch, Department of Agriculture, Toronto, will be placed with one of the leading Toronto firms, if so desired.

Health.

Health, Strength and Happiness, by C. W. Saleeby; pub. by Mitchell Kennerley.

Nerves and Common Sense, by Anne Payson Call; Pub. by Little, Brown & Co., Boston, Mass.

The Health Index of Children; How to observe symptoms of sickness, by E. B. Hoag; pub. by Whitaker & Raywiggen Co., San Francisco.

First Aid to the Injured; pub. by St. John Ambulance Assoc., price 40c.

The New Public Health, by Hibbert Winslow Hill, M. D., price $1.56; pub. by Macmillan Co., New York.

Making the Most out of Life; Health Series of Physiology and The Body in Health; Health and Cleanliness; Health Hints; Hygiene, by Shea and Kellogg; $1.00 each; Macmillan Company, Toronto.

The Care and Feeding of Children, by Holt.

Home and Community Hygiene, by Jean Broadhurst, Columbia University, price $2.50, from the J. F. Hartz Co., Toronto.

Personal Hygiene and Physical Training for Women, price $2.50, by Dr. Anna Galbraith; published by J. F. Hartz Co., Toronto.

The Care of the Baby, 1920 Edition, by Dr. J. Crozier Griffith; pub. by J. F. Hartz Co., Toronto, price $1.75.

Feeding the Family, by Mary Swartz Rose; pub. by Macmillan Co., price $2.75.

Health and the Woman Movement, by Dr. C. Mosher, Dominion Council of Y. W. C. A. price 63c.

Teaching the Origin of Life to Children:

The Story of Life for Children, by Della Thompson Lutes.
Child Confidence Rewarded, by Dr. Mary Wood Allen.
Almost a Man, Dr. Mary Wood Allen.
Almost a Woman, Dr. Mary Wood Allen.

The Study of the Body, Structure and Hygiene:

The Marvels of our Bodily Dwelling, by Dr. Mary Wood Allen.
The Body Beautiful, by Pratt.
Physical Culture and Hygiene for Women and Children, by Anna Galbraith.

For Young Women:

What a Young Woman Ought to Know, by Dr. Mary Wood Allen.
Ideal Married Life, by Dr. Mary Wood Allen.

Child Study and Character Building:

Character Building, by Mrs. Kellog.
Child, Home and School, by Della Thompson Lutes.
Children's Rights, by Kate Douglas Wiggin.
Home Education, by Charlotte Mason.

Pamphlets:—

For Girls:

(1) The Doctor's Daughter; (2) Life Problems.

For Boys:—

(1) John's Vacation; (2) Chums.

Price 25c. each from T. Eaton Co., Toronto.

The Children's Food, 5c.; The Feeding of Young Children, by Dr. Mary Swartz Rose, 10c.; Some Food Facts, 5c.; The Emergency Com. of American Home Economics Assoc., 19 West 44th St., New York City, U. S. A.

COMMUNITY.

General Community Problems:
Rural Life in Canada, by MacDougal.

The Country School:
Country Life and the Country School, by Carney.

Recreation:
Education by Play and Games, by Johnson.
Community Recreation, by Draper.
Neighborhood Entertainments, by Stern.

Boys and Girls:
Farm Boys and Girls, by McKeever.
The Farmer and the New Day, by Butterfield.
Rural Science Reader, by McCready—S. C. Heath Co., New York.

CITIZENSHIP.

Universal Training for Citizenship, by Wm. H. Allen, Price $1.50.
The Dawn of a New Patriotism, by John D. Hunt, price $1.00.
Our Government, by Mabel McL. Stevenson, price 65c.
Handy Guide to Laws of Ontario, by Edith H. Lang, price 70c.
Mrs. Parson's Manual for Women's Meetings, price 75c.
Industry and Humanity, by W. L. McKenzie King, $2.00.
Production and Taxation, by W. L. Good, $1.00.
Labour in this Changing World, by Prof. MacIver, $1.75.
The Canadian Girl at Work, by Marjory MacMurchy.

HOME ECONOMICS.

Food:
The American Home Diet, by E. V. McCollum and Nina Simmonds.
The Newer Knowledge of Nutrition, by E. V. McCollum.
Good Lunches for Rural Schools, by Richards.
Boston Cooking School Book, by Fannie Farmer.
Food and Cookery for Sick and Convalescent, by Fannie Farmer.
How to Cook for the Sick, by Lachse.

Clothing:
Clothing for Women, by Baldt.
Shelter and Clothing, by Kinnie & Cooley.
Practical System of Drafting, by Blakely & Patton.
Children's Garments, by E. & M. Wallbank.
How the World is Clothed, by Carpenter.

Textiles and Clothing, by Watson.
The Sewing Book, by Jessup.
School Needlework, by Hapgood.

Shelter:
Home Sanitation, by Talbot.
Home Economics, by Maria Parloa.
Business of the Household, by Taber.
The Care of the House, by Clark.
Home Labour Saving Devices, by Rhea Clarke Scott.
Household Management, by Terrill.
Air and Health, by Macfie.
Household Foes, by Ravenhill.
The Cost of Living, by Richards.
Laundering, by L. Ray Balderston.
Homes and Their Decoration, by French.

SELF-CULTURE.

Power Through Repose, by Anna Payne Call.
The Simple Life, by Charles Wagner.
Sesame and Lilies, by Ruskin.

MISCELLANEOUS.

The Human Hair: Its Care and Preservation, by Stillwell.
The Home, Its Work and Influence, by Gilman.

Home Economics, by Parloa.
How to Plant Home Gardens, by Parsons.
Homes and Their Decoration, by French.
Farm Dairying, by Laura Rose.
How to Enjoy Pictures, by Emery.
Three Hundred Things a Bright Girl Can Do, by Kelly.
Helps to Ambitious Girls, by Drysdale.
School Sanitation and Decoration, by Burrage and Bailey.
The Hygiene of the School Room, by Barry.
Mothercraft Manuel, by Mary L. Reed; price $2.50, McAinsh Pub. Co.
A New Baby Book which is being issued by Dr. Allan Brown; price $1.50, The J. P. Hartz Co., Toronto.
Hygiene of the School Child, by Dr. Terman; price $2.10, from The Oxford Press, Toronto.
For Boys—From Youth into Manhood, by W. S. Hall, Y.M.C.A. Assoc. Press, New York, N.Y.
For Girls—Three Gifts of Life; price 75c., Y.W.C.A., 604 Jarvis St., Toronto.

EATING FOR EFFICIENCY

Dr. Margaret Patterson, Police Magistrate, Toronto.

In these days when everyone is talking "efficiency" and trying to eliminate waste in all kinds of industrial work, how about the efficiency of the human machine? Are we giving it as much consideration and care as the automobile and tractor get?

In almost every paper one sees advice offered re "Fuel for the automobile or tractor," and every person who owns or operates one of these machines is anxious to supply it with the fuel that will produce the greatest efficiency with the least possible wear and tear of the machine. Nor is the fuel the only concern but the whole mechanism is studied in order that the operator may give it every care and prevent any unnecessary breakage.

How different is the treatment accorded the human machine which is more wonderful in its construction and more delicate in its operation than any machine ever made by man. The human machine is self-repairing if given a proper chance, i.e., the proper time in which to do the work and the proper material out of which to do it. It is from the air we breathe and the food we eat that the human machine derives the energy for the work we perform and to repair the waste of the machine.

At this time of year everyone is getting plenty of fresh air, but how about the fuel (food) we are supplying? Is it suited to the season and does it contain all the elements necessary for what is required, i.e., the building material, the energy producing and the vitamines—the wonderful substances that keep the whole machine running smoothly?

Stomach the Carburetor.

As a prominent food specialist has said, "If we would devote half as much care to the stomach, the carburetor of the human machine, as to the carburetor of the automobile!" In short, devote as much time to your "corpomobile" as to your automobile..

Food is fuel, the stomach the carburetor, and the colon the exhaust pipe. When your motor misses fire or back fires, you know what is the matter and you remove the cause; you keep your motor up to the mark, but let yourself run down through abuse and neglect until only half efficient, nervous, undecided, head-achy,

dull, irritable, sleepless, and everything going wrong. The fault is in the fuel: you are not using food suitable to the season or the needs of your body, you are filling up the carburetor with fuel that it cannot use to convert into energy and keep the machine in repair.

Too often the exhaust pipe—the colon—because of the careless habit of constipation, is packed full of decaying material and this poison is being absorbed into the system. How could any machine in such a condition run smoothly?

Foods Too Refined

Learn how to take care of your body and live efficiently. The first thing necessary is to learn your foods. Many of the most widely-used foods of the present day are so refined and prepared for commercial purposes that they are lacking in the essentials for sustaining life and producing energy, and no combination of them can make a proper diet.

Bolted flour of wheat, barley, corn, rye, and oats, peeled potatoes, dried peas and beans, polished rice, muscular parts of all meat, lard and margarine are all lacking in the vital substances—the vitamines—or protective foods must be added or we cannot maintain either physical or mental vigor. The vitamines are found in all live, growing vegetables, in foods prepared by nature as a food for the young and in the germ of grain, etc.,

Where Vitamines Lurk

There are three groups of vitamines, all of which are necessary in a perfect fuel; without them certain diseases result, viz., the eyes very soon feel the effects of a lack of the fat-soluble vitamines found in milk, butter, cheese, and all dairy products, egg yoke, liver, green leaves and honey. You will notice that these are found in all the dairy products, for milk is nature's masterpiece as a food. They are also found in egg yoke, for the yoke of the egg is nature's food for the chicken as it develops in the egg. We find these substances in the liver of animals, but not in the muscular parts of the meat, because the liver is a storehouse for the needs of the animal and here some vitamines have been stored for its use.

The third of these vitamines is found in skim-milk and in nearly all the fresh green vegetables, in lemons, oranges, unpeeled potatoes and sprouted grain.

Supplement the Grains.

Grains must ever provide the chief part of our food, and as we must pay the price of civilization and use the commercialized products we must supplement them by a liberal use of milk and dairy products as well as plenty of fresh vegetables, especially the leafy varieties such as spinach, lettuce, young beet tops and the many things that can be utilized as spinach.

Through the experiments being conducted in the nutrition laboratories we are learning that many of the weeds that appear early in the spring and have fresh growth all season are very valuable foods, milk-weed for instance... *Good Health* says:—

"Milkweed is a most delicious green. The part used is the very tip of the stalk—a few tender green leaves at the top—taking perhaps the last two or three large leaves that enclose the little bunch of green leaves that are close together. Until the leaves get tough you can use the milkweed. After they are gathered, throw them in a dish of cold water. Put a tablespoonful of salt

in two quarts of cold water. Let the greens soak in this for one hour, then wash them very thoroughly in several cold waters. Cook them for ten minutes in boiling water. Have the water boiling before the greens are added. Serve with lemon juice and a little butter, just as you would spinach or chard."

Nature Begs Mineral Salts.

Nature requires mineral salts to build strong, good bones and teeth for the growing child and to keep them in good repair in the adult. Lime is very necessary in the diet; without it the bones and teeth cannot be normal, and it is especially necessary to the growing child. There are foods that supply lime—do we know them and so plan our diet as to give nature a constant supply?

Milk is the richest of all foods in lime; lime is also found in eggs, carrots, Graham bread, blackberries, strawberries, oatmeal, prunes, raisins, onions, lemon juice, and molasses. Phosphorus is another salt that is necessary and helps to make good strong teeth and bones. It also is found in milk, buttermilk, lettuce, oatmeal, Graham bread, potatoes, celery, beef, parsnips, and pineapple.

Both of these salts are found in Graham bread, but not in bread made of the bolted flour. Graham flour is simply whole wheat flour; it gets its name from the fact that a doctor by the name of Graham, realizing the deficiency of the bolted flour, erected a little mill to provide whole wheat flour for his patients. The results were so satisfactory that its fame spread.

Change Pills for Carrots.

Unless we are going to become anæmic and have impoverished blood we must give our system some iron, and it is much better to take it with our food than as "pills after eating." The following foods are rich in iron:—spinach and other leafy vegetables used as greens, egg-yolk, prunes, beef, figs, strawberries, oatmeal, raisins, carrots and beets. When an egg is hard-boiled notice how dark it is around the yolk—it is the iron that causes this.

Nature gives us a liking for the things we need. Did you ever see a normal child who did not like raw carrots? Let them eat all they want and use plenty of them yourself. Grate them and use them on lettuce and in salads of all kinds. When a small boy runs off with a handful of raisins he is only supplying nature with the material she is calling for in order to build a good, strong, active and efficient machine, so that he will be equipped for a useful and healthy life.

We Eat Too Much Meat.

If you suffer from rheumatism or too much acid in the system, avoid meat and use plenty of celery, cabbage, potatoes, apples, prunes, turnips, beans, peas and milk. These are all foods that counteract the acid condition.

While beef furnishes a very useful protein, as a people we eat too much meat and too little dairy products.

Remember the family whose milk bill does not exceed the meat bill is an improperly fed family. To quote Prof. McCallum, of Johns Hopkins University, "Milk is the great safety margin that makes up for the deficiences in all our other foods."

By giving intelligent attention to the fuel for the human machine we could add much to the length, pleasure and efficiency of life.

COMMUNICABLE DISEASES

Dr. H. W. Hill, head of the Institute of Public Health, London, speaking before the Women's Institute convention, said that not only are infectious diseases generally recognized as communicable—e.g., syphilis, tuberculosis, typhoid—spread from one person to another, but also, there are non-infectious diseases, spread by heredity, but not usually recognized as communicable. The feble-minded, for instance, in two thirds of the cases transmit their deficiencies to their descendants, and it is important to keep this in mind, because one reason why feeble-mindedness is so strictly a public problem is that it is in this sense communicable, i.e., from parents to children. The feeble-minded are responsible for a large proportion of minor crimes and a large proportion of the total of prostitution. With it goes a great deal of physical degeneration, and the feeble-minded cannot be expected to prevent the spread of disease. "Many of them die young—but not young enough."

Dr. Hill wished to tell his audience how much the "public health" men welcome women in the field of combat against disease; it was felt that they have a persistence in such things that men have not. In matters regarding public health men deal with things they can do in a wholesale way; women are more likely to attend to the details. Operations on the wholesale have rid us of things that can be handled in that way, for instance, the stopping of typhoid epidemics by attention to the water supply. But sometimes there are people who, while well themselves, carry the germ in their bodies, and are capable of passing it on to those who are less resistent. In fact, most diseases left to-day are carried from one to another and must be dealt with disease by disease and case by case. Wholesale measures in public health are confined to a few diseases only.

In all such work we are finding the Public Health Nurse invaluable; but her full worth will never be attained until she is understood by all and serves the whole people.

The examination of young men during the war showed physical and other defects amounting to 75 per cent. on old standards. How about the women? Probably 75 per cent. of them would come under such standards also. In the schools we find somewhat similar proportions—72 per cent. of city chillren showing defects, and 87 per cent. of rural children. Up to the age of 16, children, upon the average, in Canada, will have suffered from 3½ communicable diseases each—measles, scarlet fever, whooping cough, etc. This means about 30,000,00 separate attacks for one generation of Canadian children. How many suffer afterwards, as adults, from such diseases as tuberculosis, pneumonia, syphilis, etc? If you follow this out you will find that upon the average the cases amount to six or seven apiece, with tremendous monetary expense and suffering. Even at a cost of $1 each the sum would amount to $54,000,000 in one generation. How much better to pay $100,000,000 to *get rid* of these menaces, than $54,000,000 *and suffer from them too!*

It is very difficult to give figures in venereal diseases. Estimates have run as high as 10 per cent. of the people, who have suffered from syphilis at one time or another. If the average only amounted to 5 per cent., that would mean 100,000 cases in Ontario alone. Gonorrhea is also very prevalent; indeed it is said that 60 per cent. of major operations on women are necessitated by that disease. About half of the attacks are innocently acquired—by married people

and children; therefore, we must keep on educating the public to come to a point at which sufferers will not be held back from medical aid through fear of the disgrace.

Dr. Hill here asked for questions, and someone asked for information in regard to some of the ways by which venereal diseases are acquired innocently. . . . The reply was: 1: by marriage. 2: In institutions where many young girls are kept together disease is often brought in by careless attendants and passed from one to another. 3. Children born of infected mothers.—About 90 per cent. of blindness in children is due to this cause.

Someone else asked, "Is there any cure?" "Yes," replied Dr. Hill, "prompt *early* treament will get rid of them. The trouble usually is that patients are not treated soon enough."

In reply to a question regarding the difference in symptoms between gonorrhea and syphilis, the speaker said that gonorrhea usually affects local parts although sometimes also the joints, sometimes the heart. . . Syphilis affects the whole system, even to the skin. Often when apparently cured, it returns late in life, bringing much damage to the system, sometimes causing paralysis and even insanity.

THE INSTITUTES AND SOCIAL HYGIENE.

In an address at the Central Ontario Institutes' Convention, Mrs. Emmeline Pankhurst, lecturer for the Canadian Council of Social Hygiene, said: The war was a kind of forcing house. It ripened the enfranchisement of women, and ripened public opinion concerning venereal disease. The Government of Canada and the Health Departments of the Provinces have done well in going ahead of public opinion in the matter. Great Britain has not had the courage to do that yet. In registering for army service, statistics in British Columbia show that fifteen per cent. of the men were rejected on account of venereal disease, so the trouble is prevalent enough to be worth every organization's consideration. She explained the seriousness of its results, especially to the innocent victims, including those who are suffering for the sins of their fathers three and four generations back. Women could help these by trying to influence public opinion so that innocent sufferers would not feel the disgrace too keenly to go for treatment. Mrs. Pankhurst explained, too, how the institutes of British Columbia had petitioned the government to subsidise doctors in rural districts so that the expense of treatment for a patient out of reach of a city clinic would not prevent anyone from having medical attention.

Mrs. Pankhurst emphasized the point that this was a problem for women to take up for women. It was at the root of the campaign for the enfranchisement of women in England, which many of us misunderstood—a campaign to make secure for women their occupation of carrying on the race. Their plea to the government was that they were manufacturing life, and they wanted security in their occupation. And the speaker urged that preventive measures were better than cure, that women study right to the root of the trouble, teach their children a right attitude in life, arrange a right social environment for young people, and educate public opinion to the knowledge that if there were no "social evil" there would be no venereal disease.

In teaching the truth about life to young people Dr. Margaret Patterson recommended Dr. Winfield S. Hall's publications: for boys from ten to fourteen, "The Strength of Ten"; for boys of twelve to sixteen, "John's Vacation"; for boys

sixteen to eighteen, "Chums." In girls' books there are for young girls, "Life's Story," and for older girls, "The Doctor's Daughter." We would also recommend "A Girl's Value to Her Country," written by Dr. Patterson herself. Then there are Dr. Hall's leaflets to parents.

PUBLIC HEALTH IN ONTARIO

J. W. S. McCullough, M.D., Provincial Board of Health, Toronto.

Various divisions have been established under the Provincial Board of Health. A very important Division is that of the Registrar General in which are kept the records of the births, marriages and deaths of the people of the Province. Think of the value of a birth record—it establishes the citizenship of the child, his inheritance of property; it proves his age if he wants to be insured or desires to attend certain schools. It is not the physician's duty to record the birth of your baby; it is your duty, as fathers and mothers to record the birth of your baby. It is the duty of the physician to send a notice to the clerk of the municipality saying a baby was born at such and such a place, giving the name of the parents, but he does not record the name of the baby. In connection with Mothers' Allowances, which have just been established, the records of the births of children of widows are of the greatest importance. There is also the division of laboratories. Laboratories are necessary for the diagnosis of diseases in Public Health work, and in the prevention of diseases. There are seven laboratories, two in Toronto, one in London, one in Kingston, and one each in Fort William, Sault Ste. Marie, and North Bay.

There is the Division of Industrial Hygiene for the purpose of providing a bureau of information where employers of labor may learn the best means of prevention of disease among employees; how dangerous diseases may be prevented in trades that carry in their wake poisons, such as the making of wall papers, where arsenic is used, and various other occupations. There is the Division of Venereal Diseases. We have provided a ready means of adequate treatment of these diseases free of cost to those unable to pay. Clinics for the treatment of these diseases have been established as follows:—six in Toronto, and one each in Kingston, London, and Hamilton.

There is a division for supplying Biological products to the public, so that Diphtheria Antitoxin, which used to cost $15 a dose, can now be had at $1.50, and you do not have to pay for it, the Government pays for it. It is the same with all biological products: smallpox vaccine, anti-meningitis serum, and preventive treatment of rabies.

Then there is the Division of Maternal and Child Welfare and Public Health Nursing. This Division has just been organized, and we now have sixteen nurses out in the field engaged in public health work. Eight are paid by the Department of Health, and eight by the Red Cross. These nurses are supervised by Miss Mary Power of the Provincial Department of Health. These nurses will go into the community, village, town, or township, and endeavor to form a community Health Centre. The scheme has been developed on th basis of one which has done such excellent work in New Zealand. The centres in New Zealand induced the people to provide Public Health Nurses for themselves, who would supervise

mothers in pregnancy, supervise children before school age, and who would go into the schools and with the assistance of a physician and the teachers carry on Medical Inspection of schools.

Supervision of the mother during pregnancy means a great deal. The saddest thing I know in medical practice is that a woman should die of convulsions when her baby is born. Figures gathered from hospital records show how this could almost invariably be prevented if the mother had proper medical supervision during the months before the baby was born.

In the semi-private ward where the mothers had not been under a doctor's care up to confinement, out of 1,000 cases 8 mothers died, 40 babies died, and 16 mothers had convulsions. In the public ward (where the patients had probably had poverty and other undesirable home conditions) and where they had had no medical attention up to confinement, out of 1,000 cases 35 mothers died, 79 babies died, and 30 mothers had convulsions. But in the public ward where the mothers had had medical supervision up to confinement, usually through the out-patient clinics, out of 1,000 cases only 4 mothers died, 13 babies died, and there were only 4 cases of convulsions.

In the matter of maternal and child welfare the Institutes through the programmes at their meetings can do valuable educational work.

A WORD ON CHILD WELFARE

DR. HELEN MACMURCHY.

As Chief of the Division of Child Welfare of the Dominion Department of Health, Dr. Helen MacMurchy comes to the Institutes with a message more vital than ever. "Every day," she said, "five hundred and sixty mothers go over the top for Canada. Then the babies take the field with their mothers and fight for their lives. Ontario had 62,774 births last year. Of this number over 6,000 are killed in the battle of life before they are one year old, and the casualties to the mothers is also great. If we give the mothers what they need and should have, they can save the babies. The first is proper housing and a chance for the mother to do her work in comfort and with the necessary help, so that she can nurse the baby at her breast; that is the greatest life insurance for the baby. The greatest cause of infant mortality is artificial feeding. In New Zealand, nursing by the mother is practically universal, and New Zealand's infant mortality rate is lower than probably any other country in the world.

And there must be a home for the baby. The saddest thing in the world is the homeless child. I cannot bear the name "illegitimate child." If the parents are not married, there can be no home, and of the births in Canada there are two lost sheep in every hundred. What are we going to do about it? There are two roads to every city. You remember how the priest and the Levite passed by on the other side, "but the Samaritan came that way and saw him and took care of him."

And considering all of the people of our country, let us remember that there is no safeguard for people or surety of success for the spirit, mind and body unless there is a home. Let us make up our minds that by the help of God there will be no miserable abodes in Ontario where the Women's Institutes work. Hang up a map of your township or county in your Institute room. These maps may be got from the Department of the Interior, at Ottawa. You, the mothers of

Ontario, should make yourselves responsible for every mother and every home and every child within the bounds of your Institute. "To serve your own children," she quoted, "you would strip yourselves, but the real test of your mothering is what you would do for other people's children." You mothers, you who will be mothers, and you who have missed motherhood, give them a chance.

Dr. MacMurchy then drew the attention of the members to the recent publication of the Child Welfare Division of the Department of Health at Ottawa, "The Canadian Mothers' Book" issued in 1920, and "The Little Blue Books" issued in 1921. The Little Blue Books are published in a set of fourteen volumes. (1) Good Wishes to You From Canada, (2) How to Build the Canadian House, (3) How to Make Our Canadian Home, (4) How to Make Outpost Homes in Canada, (5) Canadians Need Milk, (6) How We Cook in Canada, (7) How to Manage Housework in Canada, (8) How to Take Care of Mother, (9) How to Take Care of the Family, (10) How to Take Care of the Baby, (11) How to Take Care of the Children, (12) Household Accounting in Canada, (13) How to Take Care of Household Waste, (14) How to Avoid Accidents and Give First Aid. These books are written by Dr. MacMurchy, are published in both English and French, and are sent anywhere in Canada free of charge. Write for copies to the Deputy Minister, Department of Health, Ottawa.

EDUCATION AND BETTER SCHOOLS—REPORT OF THE STANDING COMMITTEE

Miss Katharine McIntosh.

In presenting the report of the provincial committee on Education and Better Schools, we regret that we have not been able to do more, but it seems that the only thing we could do was to gather a certain amount of information and forward it to the different branches, and after discussions to formulate a policy which we think it would be wise to follow.

The first thing we want to mention is co-operation between the home and the school, not in the form of Home and School Councils, which would really mean a separate organization, but in the appointing in each branch of a Home and School Committee. One branch with a membership drawn from four school sections, appointed two women from each section to visit the schools, and these women last year were responsible for putting on a dental clinic. In another branch which comprised only two schools, two women were appointed each month to visit the school. One committee asked what the teachers would like placed in the school, and she said, "Soap and towels and more hand basins," and the other asked for a few games for the noon hour. The following month the requests were reversed.

School Improvement comes under this heading also, and the first thing we might consider is the improvement of the school building now in existence. The Department of Education says that we will always have at certain points the little one-roomed school-house, and while we are looking forward to the coming of better schools, consolidated schools, and continuation schools, in the interim let us see that conditions that exist in and around our rural schools to-day are so much bettered, that the children will not altogether miss the things we hope for the next generation. In Lobo, where for the first time they have a continuation school, this year, the pupils were asked how many of them would have had the advantage of a High School education if that Continuation school had not been

started, and eight out of the thirty attending were sure, two thought they might, and the other twenty were quite sure they never would have had the educational advantage. The school buildings already in existence can be made to render a good deal more efficient service than they are giving, by placing in them proper heating facilities, proper lighting, proper boards, and having ventilation panes in the windows. Another difficulty is having someone to look after the school; floors being oiled will help this to a material extent, and the Women's Institute can see to it that the building conforms to the proper standard for education and health. S. H. Challon's book on "The Rural School Plan" is very helpful in our rural school planning.

You can get from the Department of Education a bulletin on "Consolidation," and also copies of the Acts relating to School Regulations.

With regard to Home boys and girls, it seems to me that the Women's Institute members should mother them more than anyone else, and see to it that they get their proper schooling. It is not necessary to antagonize the Homes where these children are, but to see that proper means are taken whereby these children get a fair measure of preparation for the citizenship that will be required of them. Truancy also requires attention. The lad does not realize what he is losing; he gets a day's fun out in the woods where nature has called him, but he does not realize he is missing the education he will need later on in life.

The towns will not accept a teacher unless she has had one year's teaching experience, which means that must be obtained in the rural districts. Why should we not have some sort of regulation such as the town schools have? We should have taught in all rural schools, Agriculture, Household Science and Manual Training, and possibly the only means of having competent teaching in the one-roomed schools would be through the itinerant teacher.

Retarded children, illiterate and non-English speaking, are problems which present themselves to all of us.

Teachers' salaries should be sufficient to enable the teacher to live comfortably. Salaries have increased during the past year, but they are not up to the standard suggested by the Minister of Education.

Another burning question is the teacher's boarding house. Almost every place, both town and country, reports difficulty in finding some place for the teacher to board, and if we want our schools to have competent teaching, we must see to it that a comfortable boarding place is available for the teacher.

Medical Inspection and follow-up work is so well-known that it only requires to be mentioned. The School Nurse also seems to have a great deal of consideration at the present time. We find that it is possible for the work to be done, and further investigation in connection with it and working for it is something that all Branches can interest themselves in.

The Hot Lunch. This is sometimes promoted best by having a woman who lives nearby prepare the soup, cocoa or whatever is being served, going to the school during the noon hour and supervising, or possibly having someone come in and prepare the lunch with the equipment which many schools are getting either from the Institute or through their Boards, and staying during the noon hour when the teacher may be absent. In a great many cases the reason we have not the hot lunches in our schools is because the teachers feel it is adding to their already overcrowded programme.

Educational associations are being formed throughout our various counties. Through the agency of a more efficient trusteeship we may look for an improvement and public opinion might be influenced in favor of women on School Boards. We must have the right woman on the School Board and back her up.

BETTER SCHOOLS AND HOW THE WOMEN'S INSTITUTES CAN CO-OPERATE

Miss A. E. Marty, Inspector of Public Schools, Toronto.

Education, more education, and still more education is the key to the solution of the problems of the new era on which we have entered since the close of the war. Democracy must be made safe for the world, as well as the world made safe for democracy, for an uneducated democracy is a menace to civilization. The new democracy demands equal opportunities of self-development for all, whether these opportunities be political, educational, or economic.

In the Province of Ontario we have been accustomed to boast of our system of free education, and yet we are still very far from giving equal educational opportunities to all our children. Equal opportunities are not necessarily the same opportunities, for what is meat to one may be of no value to another.

Substantial progress has been made in the last two years. The Adolescent School Attendance Act raises the age of compulsory attendance to 16, and eventually to 18. Recent legislation abolishing fees, has made High School education practically free. Thus, several years of High School education will be within reach of every child. The next step is to provide as liberal an education for those who will engage in the basic industries of life as for those who will follow the so-called learned professions. This can be done by supplying courses of instruction that appeal to the child with a practical bent, thus giving him a background of culture equal to that obtained from any of the academic courses.

The urban schools of our province are steadily being adapted to these larger needs. The academic type of education is being vitalized, i.e. related to actual life; the skilled hand is now regarded as the partner of the trained mind; handwork in cardboard, wood, metals, clay, needlework, weaving of textiles, basketry, cooking and all that goes with it in the way of food values, home and school gardening, in short the various types of human activity, all have a place. Physical development receives due emphasis from specially trained teachers who also appeal to the play instinct by means of organized games. Folk dancing develops grace and freedom of movement. Special teachers of art and music foster the æsthetic element. Whilst there is still much to be desired, the public is gradually being educated to this larger conception of school life. The class-room with its rows of desks where the child was accustomed to spend six hours every day at mental work is being transformed into a miniature world in which he is surrounded by the various types of human activity, all of which react on his mental life and facilitate the acquisition of the three R's.

How do the educational opportunities of the rural school compare with those just outlined? We all know that the little red school-house which did excellent service in pioneer days, is quite inadequate to present conditions. The building and equipment are unsuited to the school programme of to-day. No one teacher, however efficient, can combine all the qualifications required. The result is that

the child of the rural district is under a serious handicap, gets a distaste for life in the country and very soon turns city-wards for a permanent abode. This is one explanation of rural depopulation.

A very specious argument is frequently advanced to meet this need. "Educate the child of the rural district for agricultural life," has been the slogan, "so that he may stay on the farm." I am not in favor of one type of education for the country and another for the city. I am suspicious of any brand of education prepared for any one class of people. This results in class education, which disintegrates a country, and consequently in a great crisis, it fails to act as a unit. Class education and class cleavage are out of harmony with the ideals of a democracy. In any case, the best interests of our province are best served in a free interchange between country and city. The courses of study in all our schools should be so broad that the city child with a taste for agriculture should have an opportunity of finding his life work on the land, and the country child with a bent towards some form of industry or commerce should have the proper school environment to disclose and develop this bent whatever it may be.

The Consolidated School is the remedy for the educational handicap under which the children of our rural districts are being reared. Picture the large well-equipped building with its Manual Training and Household Science rooms, its gymnasium, Chemical Laboratories, Library for the school and the community, its Community Hall. Then surround this school with several acres of land sufficient for football, base-ball, tennis and other out-door sports. Place in the school a staff of efficient teachers, specialists in their departments, ranging from the Kindergarten to the High School staff who prepare their pupils for College. No more worry about sending the young child to a High School away from home. All this which is considered necessary for the education of the children in urban centres is just as necessary for children in rural districts.

In face of these advantages why is the Province of Ontario so slow in establishing Consolidated Schools? Manitoba has 100, Saskatchewan and Alberta each have upwards of 30, and Ontario, the banner province, has 3. We cannot urge poverty. The Provincial Government is most generous in its encouragement of the system by grants of money. The transportation problem is solved as easily in Ontario as elsewhere. The parents in the rural districts in Ontario certainly care as much for their children as do the parents in the Western provinces. Can it be possible that we in Ontario care less for education than they do?

If the children in the rural districts are to have the advantage of a liberal education—which is their birthright—the women of our province must come to the rescue. After all, women are more directly concerned in the rearing and education of the children than men. This responsibility has been theirs in the home. Why should they not assume a share of the public responsibility of school administration? Women should be represented on every Board of Trustees, and once elected they should not rest until they have secured for their children the educational advantages which can be obtained only through the Consolidated School.

There is no better means of working than through the Women's Institute, by the organization of Home and School Clubs. A Home and School Club whose membership is constituted of parents—fathers as well as mothers—and of teachers, is invaluable for the purpose of creating and maintaining an intelligent interest in the school of the district. Where a Women's Institute includes only one school

district the Educational Committee of the Institute might do the work provided that they add men to their committee. The right kind of work is done by men and women working together, not by men alone or women alone. Where a Women's Institute includes more than one school district there should be a separate organization for each school composed of the parents and teachers. No two school districts have exactly the same problems, moreover an educational Committee of women, scattered over the country cannot grapple with the intimate problems of a district of which they are non-residents. If the women really want better schools and better education for their children there is no time like the present.

NOTE: Concerning the organization of Home and School Clubs in the rural districts, The Committee on Education and Better Schools feel that in most localities where there is already a Women's Institute, the forming of a new organization would mean a duplication of effort, and that the work could be more effectively carried on by a Home and School Committee of the Women's Institute.

MEDICAL INSPECTION AND THE SCHOOL NURSE

A new plan of the Department of Education, in carrying out Medical Inspection of schools in Ontario, makes it possible for the Women's Institute to be of valuable service to the community in hastening the coming of inspection to their own district. While the original plan of the Department of Education in taking over the work was to make a thorough survey of each county until the whole province was covered, it has since been decided to go first to those centres where public opinion is ready for the work. A Women's Institute or a group of Women's Institutes that can send to the Department of Education a strong, well-supported request for medical inspection in their district, will be served at as early a date as possible. A number of institutes have arranged public meetings to bring the matter of medical inspection before the people of the district. In such cases the Department of Education will send a representative to discuss the question if they desire it.

While local people are not required to give any assistance to the doctor making the inspection, it would be very helpful in sections far from a hotel or boarding house, if the Women's Institute could make previous arrangements for a noon meal for the nurse and doctor conveniently near to the school. The doctor and nurse making the inspection provide for their own transportation and hotel accommodation.

One of the objects of medical inspection is to lead to the appointment of a permanent school nurse. There are at present sixteen permanent school nurses at work in the province, each serving an area taking in a number of schools. Where a school nurse is employed, the district is required to pay her salary of $1,200 and to provide for her transportation from school to school through the territory served. Where a number of school sections unite making a compact group of thirty to forty class-rooms, which can employ a school nurse steadily, the Department of Education gives a grant of $10 a class-room toward her salary. The Institutes in a few districts have solved the transportation problem by providing a Ford car. In counties well covered by railways and radials the nurse usually travels by train, hiring an occasional livery when necessary. Frequently the Institutes have brought pressure to bear on the township and county councils to give grants toward the support of the school nurse.

CONSOLIDATION OF SCHOOLS

The general advantages of school consolidation are fairly well known. There are now several consolidated schools in operation in the province, and representatives who have been in touch with these schools may be secured from the Department of Education to attend a public meeting in any locality where the question is under discussion. In this way, methods of meeting local conditions may be worked out satisfactorily.

THE INSTITUTES AND FEDERATION

Mrs. H. E. Todd.

(From an address at the Convention at Ft. William.)

I know you will have a successful Convention, for that is in your hands, (and they are most capable) and from your own meeting together there will come to us of Ontario—East, West, North and Central—the findings of your Convention, an expression of your needs and helpful suggestions from you as to remedies to be applied. In this way we hope to have Ontario speak as one voice of her rural women's problems and, as one body, seek solution. Such expression and such seeking must bring results in betterment of our life generally. In our land of mountain and waterways, you may have seen a stream flowing on, breaking into many channels until its volume and forces are spent, and only a marsh results. Again you have seen the many little rivulets of the mountain side converge in an ever-deepening, ever-widening stream, which gathers into itself the combined volume and force of all the smaller streams and rushes on, distributing joy and blessing to the land through which it flows. The great river becomes a joy and a force in the land, attracting to its banks the homes of the people, but every rivulet had its part in that fruitfulness; every drop of water, indeed, has made its contribution to the beneficent effect of the whole.

Twenty-five years ago temperance workers were trying to reform the individual drunkard, and to save the boy from becoming a drunkard by pledging him to abstain. It was a noble work, but out of it in due time, there was born a better way and to-day as one voice our nation says,—"It is not enough to cure the occasional drunkard and to save a boy here and there. We must prevent the degradation of our manhood by putting the curse of strong drink out of bounds for all time."—And so it is that the methods of service to meet human needs have changed and are changing and on every hand we find effective work possible only through organization of the individuals into communities, into Provincial and National bodies. The war itself made very real to us all the Divine truth that "No man liveth to himself."

Our objects as stated in our Constitution, (not yet two years old) are:—

(a) To co-ordinate the efforts and further the plans of all local Institutes for home improvement and community betterment.

(b) To voice the sentiments of the Local Branches on all matters of Provincial importance within the scope of Institute work.

(c) To co-operate with the Ontario Department of Agriculture or other Departments of the Government in work on educational and social lines for the improvement of our National life.

As citizens, we have our part to play in the political life of our land, but whether Jones, Smith or Brown sits in our Legislative Halls or in Parliament is not the all important matter. Politicians would have us believe, "the important matter is that we women accept the responsibility of the franchise," and so use it that a worth-while contribution be given to our National life.

In the "New Era in Canada," Stephen Leacock points out some of the "unforeseen tendencies" of democracy during the 19th century. We learned that Democracy "could be led astray. It could be bullied. It could be washed from the moorings of common-sense by the flood tide of hysteria. Worse than all, it could be bribed, or even as the time went on, it could be bought outright," and he closes with the great fact. "The truth of the matter is very simple. The form of government can avail nothing if the spirit is lacking." As Women's Institutes, ours is the greater patriotism which seeks (irrespective of party issues) the inspiring of public opinion to a high ideal without which the democracy of the 20th Century will fail as surely as the Democracy of the 19th Century.

Through membership in our Federation, the Branches are linked up as an educational and social agency, thus giving to each a fuller power of expressing such an ideal before its community. Our Federation aims to serve the Branches by developing responsibility for this high ideal; their varied experiences are focussed in our Federation; corporate action is made possible through the Federation and information and help can be imparted to the Branches from the central body.

Have you ever thought what has become of the many strong, well thought-out resolutions which pass through our various conventions? Carried enthusiastically by the members, we hear no more of them. When you can leave these wishes of yours with a Federated Board, a central body representing the voice of the Institutes, this need not be the story of resolutions—"Wasting their sweetness (or otherwise) on the desert air."

It may be asked if all this cannot be accomplished through the Department—our Department has great service to offer the people through the medium of a non-partizan, non-sectarian body, such as our Women's Institutes, but it is the official side of our movement, and more and more, Government officials are recognizing the need for a voluntary organization through which to get the voice of the people and to give more effective service to the whole people.

Our Educational Department offers service, but the people (trustees, teachers and ratepayers) must co-operate to get the best results. So in our Health Department, where in each branch of the service there is the co-operating body of the people themselves rendering more effective the Department's service for Public health.

Even in organization under our own Department (the particular service authorized by the Act) our work is halted, except in so far as the voluntary units are active. Our able superintendent, with his well-known zeal for our work, always seeking its extension and improvement, cannot in the very nature of things, press for the special attention of our Minister to the wishes of,—say, the North—as to the development of your work. But your Federation, as representative of the women themselves, has no such limitation. In this relationship so mutually helpful, there is constant growth: the view-point changes and the sphere of activity enlarges as we learn how inter-dependent we are upon each other, and upon forces not reckoned with heretofore. The means by which the Federation planned to serve were by its Standing Committees. It has been

a great handicap that, while attempting six Standing Committees, the Federation has had to make itself known to the branches. In other words, while struggling to function along several lines of true Institute activity, it has also been necessary to establish ourselves as a "going concern." This had to be accomplished at the first with no money grant from any source—(with purely voluntary service). In this connection, I desire to express sincere appreciation of the help of our Superintendent and his staff, for, during the first year or more, we were wholly dependent upon their help to reach the branches. In fact, we feel the third object of our Federation—co-operation with our Department—has been well carried out. I firmly believe the possibilities for mutual helpfulness between Department and Federation have only been tapped heretofore; the more such co-operation can be developed, the greater the service to the individual Branches.

Two years ago the suggestion of an amount which each branch would pay for the central organization based upon 15c per member per year, was accepted by the Conventions. This is used to give thorough representation to every part of our Province—first on our Board of Directors, and secondly, in providing for the annual election of this Board. Consistently one-quarter, or three and three-quarters cents per member this year, was voted for the National Federation, into which every Province in Canada has now entered.

There are two constant disabilities under which our W.I. movement struggles; first, the difficulty always experienced in securing real co-operation among rural dwellers—we are easily moved to suspicion, and spasmodic support is not a good foundation upon which to build a noble structure—only time and the knowledge that greater possibilities for individual growth and community service lie in co-operation of the branches through the Federation, will overcome this disability. In this development of resultant efficiency from co-operation, we find the experience of our U.F.W.O. very helpful. The second disability is the constantly changing representation. This is a real democracy, and while the yearly changes in our workers make smooth easy organization out of the question, yet, eventually, it will mean a whole people informed and interested in our Federation, having seen through it the larger vision, and, after all it is not organization we seek for the sake of machinery, but for the sake of greater effectiveness which comes from united effort for a common cause. "Unless life itself be cast in the scale, no life can be won, no cause prevail."

If we judge the Federation by the sacrifices of time and energy put into the two years and nine months it has lived to serve you, then, indeed, is its future secure.

In closing my term as your first President, I wish to pay sincere tribute to the whole-hearted way in which the members of the Board have "cast life itself into the scale." It is no "joy-ride" for these women to come down on early trains, sit hour after hour in close attention to committee work. They are all busy women, with home duties like yourselves. Railway fare in many cases (and in some cases, not even that) has been the only account rendered. In our meetings, which have been necessarily limited, never once have I seen a selfish, narrow spirit evidenced; each member felt, spoke and acted in the place of the sub-division she represented, and my years of presidency have been years of such enrichment of my own life's outlook, that what I have been able to put into "the scale" is indeed a very slight thing in comparison with the wealth of experience it has brought me. They have been strenuous years, but I have had your loyalty and your affection and the joy of accomplishment of some lasting good.

The Institute in its Federation has a great future; material betterment may come to many centres through the efforts of individual Branches, but material advantage alone does not suffice. "Where there is no vision the people perish," said the prophet of old. We have, in our Institutes the finest units in the land in our individual branch members, but the vision our Federation presents to you is a mighty massing of these units "For Home and Country"—in better schools, in better health measures, in better agriculture, in better laws; with all these as our united aims, our whole rural life will be dignified; it will be known as the way of life, most truly blessed.

OUR DUTY TO OUR HOME AND INSTITUTE.

Mrs. D. Gamby, Stratton.

The Woman's Institute is such a stout ally of the home, particularly in rural districts, where diversion is so closely narrowed that the success of the one depends largely on the success of the other, but we shall give first preference to the home for no matter what its hardships it is the best place this side of Heaven.

Wealth and comfort are good, but nothing can give to us such genuine satisfaction as the place we call home whose foundation is love and fidelity, whether in the cabin or the palace. A mother's duty is a very responsible one. The moulding of the character of her children, teaching the girls to be capable housekeepers and companionable wives, also to be pure and discreet in their ways; teaching the boys to think quickly, reason clearly, and above all endowing them with the principles of truth and integrity. All human interests centre around the home and through its thoroughness depends the efficiency of the school, the church, and the community. But we must not aim too much to be model housekeepers and lose sight of the model home. The house is only the shell for the home. A little dust here and there, better than a little dust on the mother's mind which immediately has its influence on all in the home.

A necessary duty of the mother is to create a spirit of co-operation in the home, giving to each their share of work and responsibility so that she may not become over-burdened, but may be a Haven of Rest to her husband and children where they may bring all their sorrows and joys and receive sympathy and praise. The Twentieth Century says, "The house wife is the World's leading citizen, the guide for the race to come, and in her hands lies the shaping of the heart, body and brain of her children." Think what an incentive to husband and child is a bright happy home. The mother, therefore, must save her nervous energy by planning her home on a system which is the only way to command success at the hardest job one can undertake, that of a wife and mother.

Our duty to our Institute should not be difficult. The same points which apply to our home are necessary here too—co-operation, regularity, sympathy, ambition and a willingness to help along the work and reap results from our plans. Each member should become enthused in the work. One duty each should feel, never to promise to do something you probably cannot carry out. Be free to promise to do all you can but give rather a decided "no" than a disappointing "yes." Let duty be our Watch-word.

DISTRICT NURSES FOR NEW DISTRICTS.

Mrs. D. Garver, Slate River.

Community nursing is as old as the home. Years ago the mothers of families were called for, and they used to go miles to attend to the sick. Community nursing is just a reproduction of the work of the Good Samaritan of our Saviour's time. Our Italian sisters were the first to go out and do what we call public health work in spreading abroad the gospel of fresh air, sunshine, and right living.

When we speak of the public health nurse of to-day we mean not only one who is capable of going into the sick chamber, but also one who can teach the mothers the care of children, can help the expectant mother to take care of her health, and better still can help the growing boy and girl who have their lives before them. Think what this nurse means to the women who live fifty miles back in the country away from medical aid. None but those who have gone through the experience know what it is to be left to their own resources, and what a tower of strength such a nurse would be to the mothers in these districts when medical help is needed and the roads are almost impassible. The nurse could hold on until the doctor could get out to the patient. Outside of this there is plenty of work to keep a nurse busy six days out of every seven.

There is school inspection, the following up of the doctor by seeing that his orders are carried out. One does not need to go into details, as Miss Carr-Harris who has visited most of your institutes has told you all about it. What we want in the rural districts are real, practical nurses with special training in maternity work. When the Hon. Walter Rollo, Minister of Health and Labor was in our district, Mrs. Allen and I were asked to interview him upon the subject of district nurses. He said such things would have to be put into concrete form before any one could get legislation. In other words resolutions would have to be made strong and forcible enough to have weight with the Government, but he promised to give such resolutions his careful consideration if rightfully presented.

On the home life of our country our civilization is built, if the home life decays, our civilization will fall. The Canadian people are too true at heart to become careless of the mother and the mother's life. Now that you and I have the vote we are strong enough to do an enormous amount of good in this community. No one ever lived long enough to be glad he had neglected his health. As co-workers I ask you to give this your careful attention and discussion and hope we can make some advancement along this line. We have talked for years about this and are still at the beginning.

THE FARM MOTHER'S WORKING PROGRAMME.

By Ethel M. Chapman, Toronto.

A farm mother who had formerly been a successful teacher of primary classes, dropping into the city on a shopping expedition presented an old classmate with a photograph of her two beautiful children.

"How wonderful", the friend exclaimed, "Two children like that and the marvellous way you'll be able to bring them up! I remember, still, how your classes always behaved like little angels and seemed to have twice the imagination and joy of life of other children."

"I had thought of that" the mother admitted. "It seems as though all my life I have looked forward to what I could make of a child of my own; and now that I have them I'm so busy that when I do get through with the work I'm too tired to play with them. I'm not giving them anything of myself that's worth having."

Another woman whose life had been crowded with the routine of washing and churning and baking and cooking for hired men with all the lack of mechanical help common to an old-fashioned farm house, was speaking of her daughter who had also married a farmer. "Jean has had time to enjoy her baby," she said. She said it only with an air of thankfulness, but contrasting her tiresome round of drudgery with the daughter's life in a home where the work had been simplified to save time and unnecessary labor, one wondered whether there might not be a little regret mixed with the gratitude. Her own family had been children only for the brief years allotted to childhood. Perhaps, she, too, would like to have "enjoyed them" more.

Compare the programme of the average farm mother with that of the woman in town in a similar position financially, neither of them wealthy, but both able to provide for their families comfortably. The farm family rise perhaps an hour earlier in the morning because there are "chores" to do and the children have farther to walk to school. The farm mother may have a hired man for breakfast, she has to put up lunches for the children because they cannot come home from school at noon. When she gets them off she has the same household tasks as the woman in town, with the addition of washing the cream separator and cleaning the lamps and feeding the chickens; perhaps she also helps to milk though this is becoming less common. She does all her own baking including making the bread in some cases; There is no delicatessen store around the corner in case of a sudden inrush of company, so she has to be provident in the way of canning and preserving and keeping her larder replenished with home made things. She does the whole of the family washing—there is no neighboring laundry to take even the heavy things, and the dust and soil of the fields makes washing a considerable farm industry in itself. Worse yet, she frequently has to pump from a cistern and carry in and carry out all the water used in washing as well as for other purposes about the house. If the house has no furnace she has to keep fires going and carry out ashes all winter. In the summer time she may have extra men to board through the rush season, and if there are not extra men she is sure to be taking on extra chores outside because her own men are inordinately busy—and this is also the season when there are small fruits to pick and canning to do, and a garden and young chickens needing attention. Sometimes, she is also churning and making butter through these months. When the house goes quiet between nine and ten o'clock at night and she seizes the next choice hour to make another attack on the family mending or kindles up a fresh fire to finish the weekly ironing, the belated work is not the result of mismanagement. She has already crowded her sixteen-hour working day with all the labor that is humanly possible.

At the recent convention of the American Association for the Advancement of Science, Sir Clifford Sifton spoke of the movement from the farm to the city as being due to the revolt of farmer's wives against the slavishness of farm work, and suggested that it should not be beyond the resources of science to provide means to lighten domestic labor on the farm. This seems to be the newer attitude of the women themselves. They discuss it in their club meetings and read of it in magazines and newspapers. They agree that the country is the best place in

the world to live in and the only place to bring up children, and that homemaking is the happiest profession for a woman, that in no other place has she such a scope for her head and her heart and her hands and all the executive and administrative ability she can cultivate. They have among themselves farm mothers who are doing their own housework, bringing up their children and at the same time being intelligent, companionable women, but they are also familiar with the testimony of the capable ex-teacher. "I am so busy that when I do get through with the work I am too tired to give my family anything of myself that is worth having" . . . . . If the possibilities of the farm home and country life and the profession of homemaking and motherhood are to be all that is claimed for them, it must be put within the strength and ability of the average farm woman to do the work of her home happily and comfortably.

A short time ago some farm women in the state of Nebraska issued a "Declaration of Independence" demanding a power washing machine for every tractor bought for the farm, a bath tub for every binder, running water in the kitchen for every riding-plow, a coal-oil cook stove for every automobile truck, a fireless cooker for every mowing machine, and a share of the farm income. With the women in the well settled sections of Canada the general feeling seems to be different. The revolt is not at their men but at conditions as they have come to accept them, grown into them.

New machinery has come to the farm out of necessity. With the growing shortage of farm labor one man has had to do all the work of three or four and he has to have all the mechanical help he can get. There are correspondingly fewer women in the farm homes. The daughters are going to school, the unmarried sister who used to be a great boon to busy mothers is a much-occupied business woman in town, and the hired girl in the country simply doesn't exist. You can't get a girl to work in a house where she has to carry water from a well and wash milk pails and stoke a wood stove when she can get almost any wages she wants in the neighborhood of steam heat and movies and water-power washing-machines. The farmer's wife does it herself, not just because her lot has been cast in the country, but because she believes the advantages of the country outweigh those of the city as a place to live. Sometimes she gets overtired and discouraged and wants to leave the farm. Sometimes her health breaks down and the family have to move to town. Her husband knows just one trade or profession, farming, so he has to hire out as a laborer; he does not like it; he longs for his fields and herds again. Having to buy every scrap of food and fuel is a new experience after coming from the abundance of home grown things on the farm, and the man's wages are not large—if he had been trained for the city it would be different. They soon find themselves scrimping along on the edge of poverty, and they cannot give the children the chance they want them to have.

And the whole tragedy might have been prevented if the woman's discontent or physical breakdown had been forestalled. Hired help is out of the question. A man on a farm cannot give much help around the house because he already has more than he can do outside. The only solution is mechanical equipment that will save time and take over the heavier manual labor of housework.

One of the first forces to the rescue of the farm homemaker will be the domestic architect. The new Canadian farm house will have no floors of different rooms set at irregular levels with a few steps up or down between. There will be even a dumb-waiter to eliminate unnecessary climbing of stairs between the cellar and kitchen because the builder will take into account the simple fact of

household mechanics that whenever a woman takes a step up, she actually lifts the weight of her body. If she weighs one hundred and twenty pounds and her stairway has ten steps, she has actually lifted over half a ton by the time she gets to the top. Instead of a closed up parlor isolated by chilly halls from the rest of the house there will be a sunny living room close enough to the kitchen to be used by the whole family every day. Instead of a frigid spare bed room, and a balcony that no one ever uses, and an unnecessary back stairs, there will be a screened porch or sun-room with a sleeping porch above it and a furnace in the cellar and a bath-room upstairs.

The architect will also take into consideration that it is the reaching up and stooping down that are responsible for much of the fatigue of housework so he will place the sink at the proper height for the woman who is to use it, and he will not put cupboards under the sink where she will have to go down on her knees every time she wants a frying pan. If the original builder has erred in these details the family will make the corrections themselves.

Another serious defect in houseplanning from the housekeeper's standpoint is the failure to have a compact arrangement of rooms. Instead of the straggling line of kitchens and summer kitchens trailing out towards the back of the lot, with the summer cook stove in the one farthest from the main part of the house, the new farm house will have one kitchen, well supplied with working equipment including an oil stove to be used in hot weather. Perhaps before long it may be within the reach of many farms to cook by electricity.

Perhaps the severest trial of the woman in a poorly-equipped farm house is the carrying of water. It is estimated that where there is no sink in a house a woman lifts about half a ton of water a day, taking into consideration what she carries in and what she carries out. Just the actual lifting and carrying, however, is not the only reason why women ask for a water supply before any other household convenience; they are looking ahead to the luxury of a bath-room, though this is coming to be considered a necessity to health rather than a luxury. Farm mothers are beginning to ask themselves why they should have to haul the washtub into a draughty kitchen to give the children a bath on Saturday night, and why it should mean a daily hardship of carrying water up and down stairs to keep up the ordinary standards of living while the poorest tenant house in the city is equipped with a white enamel bath tub.

If there is a power plant of any kind operating on the farm, of course, the problem of a water system, and of other mechanical equipment in the house, is simplified. If there is no power available, running water may still be had through a storage tank and hand-pump. The coming of electricity is about the best news that ever travels through the rural districts, and if it doesn't come in the form of a power-line it can be supplied from a private plant. Once installed at the barn, where it can pay for itself in actual money value, it soon finds its way to the house. We never count its money value here because we have not yet set any estimate on a woman's time or endurance, but these are some of the things it would do:

Just electric lighting itself saves possibly half an hour every day in cleaning and filling lamps and lanterns, very uninteresting work, too. An electric iron attached to one of the light sockets saves all the work of keeping an "ironing fire" going, all the trips to and from the stove to change irons, and all the inconvenience of working with a cooling iron. Electricity pumping the water means that the woman is saved the detail of lifting that half-ton of water every

day, together with the many trips out of doors to the pump in all kinds of weather. If power is used to run the washing machine, she need put her hands in water only to lift the clothes from the machine to the wringer, and to starch and hang them out. She may do the washing for a family of almost any size and get through the day without a backache. She does not sit down to read while the machine is running—a power washer keeps one steadily going changing waters and such detail—but the work will be done in two hours where it would take a whole forenoon or longer at the washboard at one of the most toilsome pieces of work done on the farm indoors or out.

If the farm cannot have electricity, it *can* afford a little portable gasoline engine to run the washing machine, or failing this there is no excuse for not having an easy-running hand machine. There is probably as much difference between a hand-operated washing machine and a washboard, as there is between turning the crank of a turnip pulper and slicing the turnips by hand.

A similar comparison might be made between the vacuum cleaner and the broom. Sweeping carpets, on account of the straining, twisting motion involved, is said to have put more women in the hospital than any other piece of housework. With a power vacuum cleaner, the sweeping of carpets becomes such an exercise as even a child might enjoy, but if we have no power system we can, at very little expense have a hand vacuum sweeper which requires only straight pushing and pulling back—an entirely different process from the twisting motion of the broom.

And there is the cleaning of floors. Our grandmothers with their beautiful white pine floors have been known, some of them, to wait until everyone had gone to bed on Saturday night so there would be no danger of their work being marred by muddy feet—then to get out their "patent pail" of scalding water and scrub brush and sugar bowl of soft soap, and to make of that floor a thing to dazzle the eyes on Sunday morning. . . . And much as we hear of the decadence of the race, we know that a lot of our grandmothers had rheumatism, and grew old before their time, and had not the heart to buck up against conditions that should never have existed.

The farm mother who looks ahead for the greatest good to her household will not be found scrubbing at one o'clock in the morning. She will have her kitchen floor covered with linoleum and she will not go down on her knees to it. She will use a mop with a wringer attached to the pail so that she need not even put her hands in the water or bend over the pail to wring the mop.

These are only a few of the signs of the farm mother's new vision. The movement can only be made effective and general by the concerted intelligence and study and effort of greater numbers of farm women who know their own needs and the most practical means of relief. It is a problem big enough to have a place in every programme of every Women's Institute.

THE FARM WATER SUPPLY AND SEWAGE DISPOSAL.

NOTE: For information contained in this article we are largely indebted to Prof. R. R. Graham of the Physics Department of the Ontario Agricultural College, and to R. A. Hocking a graduate of class 1922, who did valuable research work on this subject for his thesis taken in the Physics Department. For more detailed information we would suggest that anyone interested write the Ontario Department of Agriculture for Bulletin 267, and that for advice on individual problems they

communicate with the Department of Physics, O. A. C., Guelph. This Department is giving most practical extension service in helping individual farmers throughout the province with their special problems in installing water systems and septic tanks.

A practical farmer who had lived in the city also, recently related the following experience, through an Ontario farm journal: "Our water system, more than any other improvement that we have made around the place, gives us unending satisfaction and has robbed the city home of what was once its leading point of superiority. Not only have we found it quite possible to have running water, hot and cold, in a farm home, but the installation is less expensive than it is in the city. Our city installation cost us $225.00, a large part of which was plumbers' bills. Our farm bathroom represents an outlay of not more than $150.00.

"The difference in cost as between city and country is due to two factors—the cost of equipment and reduced labor charges. When we installed our country system we first sent a rough sketch of the proposed installation to a couple of supply houses and to a well-known mail order house in Toronto. The latter firm gave us quotations from 25 to 50 per cent. lower than we could have secured from the nearest retailer, and they paid the freight in addition. Through the same source we purchased a pipe wrench, pipe cutter and stocks and dies for threading pipe. We did practically all of the work ourselves. Home plumbing is not so difficult as it once was. It is now possible to buy equipment that can be installed complete with iron pipe and threaded joints.

"And what a comfort is a bathroom! I enjoy it to the full. I wouldn't be without it if the cost were twice as great. But the women folks are the chief beneficiaries. No more longing for the comforts of the old city home. They have them right on the farm. I don't anticipate that they will be instrumental in furthering rural depopulation for, if all reports be true, rural women who live without city conveniences have a habit of sowing seeds of discontent and taking the whole family off to town."

The question of cost which this farmer mentions is important. There are few indeed but will admit that a complete water system for the farm is highly desirable; but many are deterred because of the expense involved. Many improvements may be made, however, such as safeguarding the well from pollution, installing an hydraulic ram, septic tank, gravity system, etc., which are not very expensive. And when the farmer is able to do a good deal of the work himself the cost is reduced to a point where thousands can afford the installations. Many different systems and devices, or modifications of these, may also be used according to local requirements and the peculiar circumstances of each case. With a practical working knowledge of the principles of farm water supply, water systems, equipment and sewage disposal, few indeed who have impure well water and are without household and stable water conveniences but can make improvements of a most beneficial nature and at a cost which they can afford to pay.

Protecting the Farm Well.

While driven wells may be constructed more easily and cheaply than dug wells in certain localities, and while drilled wells are necessary in some sections, the great majority of wells in Ontario are of the "dug" or "shallow" type. As the "shallow" well obtains its supply of water from the soil strata near the surface it is more subject to contamination from outside sources and deserves some

pecial protection. It should not be located on a slope or in a hollow where efuse and debris will be carried to it by surface washings of the soil during eavy rains, or the thawing of the snow in the spring. It should be at least ne hundred feet from cesspools, privies, or other possible sources of contamination. When the cribbing is placed in the newly dug well the upper ten feet of rick work should be laid in cement mortar with a layer of concrete six to eight nches thick placed around the well between the brick and the earth. The concrete forces the water to soak through the soil for the ten feet before entering ne well. The cribbing should extend about one foot above the surface of the round and the concrete should slope from the top of the cribbing to the ground, o prevent waste water soaking down between the earth and the layer of cement. The well should have a close fitting wooden or concrete cover to keep out earthworms, toads, frogs and debris.

Hand Pump Inside the House or Barn.

The system consists of a pitcher or a hand force pump, attached to the sink, and ne suction pipe leading to the well outside the house. A similar pump for soft ater is often placed on the opposite side of the sink. The force pump may e connected to an attic tank which supplies the water for the various plumbing xtures.

This arrangement is very simple and one which the average farmer can inall during his spare time. It is only applicable when the vertical lift does not xceed 22 feet, but it is capable of drawing the water 200 to 300 feet horizonally. The suction line, from the well to the pump, should be laid as direct as ossible, and all joints must be made air-tight. A check valve and strainer should e placed on the end of the suction pipe in the well to keep out refuse material nd to hold the suction line full of water. All piping should be laid underround below the frostline. The suction pipe, from where it enters the house o the pump should be protected by a covering of hair felt, asbestos, or other nsulating material.

The cost of installing this system is very small since it does not require ne services of a plumber, an estimate of the cost at the present time including abor is approximately $24.

The Attic Tank System.

Perhaps the simplest of all water systems is the attic tank system, the istinctive feature of which, as its name implies, is a storage tank in the attic f the house for supplying water by gravity. The tank may be filled by kitchen ump, power pump, hydraulic ram or siphon or by the rain water from the oof. This system is best adapted for utilizing the soft water from the roof r cistern for washing or bathing, but for drinking purposes the water would ecome rather warm in summertime, except water supplied continuously from spring by an hydraulic ram. The tank may be made of wood lined with alvanized iron, of metal, or of two or three oak barrels joined at the bottom y iron piping. This system is giving good service in many homes to-day. One isadvantage is that occasionally the tank may spring a leak, causing damage o the house or furniture. As the quantity of water stored is usually not large, he system is not applicable for washing vehicles, etc. Nor for fighting fire, especially as it will not deliver water higher than the tank itself.

The Elevated Tank in the Yard.

A system somewhat akin to the one just considered is that of having a large stave or metal tank erected on a high tower in the yard usually in connection with the windmill structure. Water is pumped into it by one or other of the methods already noted and flows by gravity through pipes laid to the house, barn, lawn and garden.

The system has many obvious disadvantages for general use, but it is well adapted for lawn and garden watering, as the water has a chance of being warmed in the sun before being applied to the plants. Except for this particular advantage, it is doubtful if anyone would consider installing this system to-day when superior ones can be secured, for example, the compression system.

The Compression System.

This system consists in storing water in a steel tank under high air pressure, which drives the water out of the taps whenever they are opened. It has many distinct advantages over other systems. The stored supply of water is kept clean, pure, aerated and cool in the air-tight underground or in the cellar, and being under constant pressure it is always available to all parts of the house for ordinary service and, if necessary, under extra pressure for fire protection, watering lawns and garden and washing vehicles. It is simple and compact in construction, durable, efficient and easy to operate, the electric-driven outfit being entirely automatic. Unlike the elevated tank system it is not a source of danger to life and property, and the stored water is not subject to freezing in the winter and heating in the summer.

The system consists of an air-tight, metal storage tank, a force pump and iron piping for connecting well to pump, pump to tank, and tank to faucets. When the pump is power driven there is also an engine or motor.

Kinds of Power Used for Pumping.

The power used for pumping may be hand, gas engine, electric motor or windmill. Probably the majority of the systems installed to date are operated by hand, but the power-driven are rapidly increasing, and are very much more satisfactory. One or one and a half horse-power gasoline engine is adequate when used only for pumping, but in many cases it would be advisable to have a larger engine so that other work might be done as well.

The costs can be given only in a very general way as they vary considerably with size and type of installation and conditions under which the system is installed. The following estimates do not include piping through the house or plumbing fixtures:

(1) Hand operated plants $150 to $180.

(2) Gasoline engine operated $275 to $350.

(3) Electric motor driven $225 to $325.

Windmill Operated Systems.

At the present time the windmill is used on many farms to pump water for the live stock only, and the old practice of carrying the water supply for the household is still continued. With the windmill as a source of power a very

satisfactory plumbing installation can be put in the house at moderate expense. A compression tank connected to the pump and the various plumbing fixtures will supply fresh water to all parts of the house.

The Hydraulic Ram for Economy.

The hydraulic ram is one of the cheapest means of pumping water if the conditions are suitable for its use. The force of the water entering the ram through the drive pipe is utilized to pump a portion of the water to a tank situated in the house or barn, usually at higher elevations. It is a common practice to have a tank situated in the attic of a house with the overflow from the tank leading to an open trough in the yard. If desired the overflow pipe from the house may be connected to an elevated tank in the barn but lower than that in the house and from this tank the water may be piped to any part of the stable. The overflow from the tank in the barn should be connected to a tile drain. Care must be taken to protect the pipes from freezing during the cold weather.

The use of the hydraulic ram is limited in that it wastes more water than it pumps to the buildings. This requires a constant source of good pure water in order to meet the demands on the average farm.

To determine when conditions are suitable for the installation of a hydraulic ram consult Bulletin 267, page 30. This bulletin also contains a form which, if filled out and submitted to any maker of rams, will enable him to advise whether a ram is practicable, and if so, what size. The costs of installing hydraulic rams as gathered from actual cases investigated by the agricultural college in 1920 run from $53 to $92.

Spring Gravity Systems.

This system is only applicable where the source of supply is higher than any other point at which the water is to be delivered. The system is simple and inexpensive. Very little attention is required to keep it in working order and anyone can install a gravity system provided the conditions are suitable for its operation.

Care must be taken to lay the piping as straight as possible and deep enough underground to escape freezing. If the piping used from the source of supply to the house or barn is too small there may be considerable trouble caused by air collecting in the pipe and stopping the water. This air, being held in solution, escapes from the water in the form of small bubbles. As these accumulate inside the pipe they set up a pressure which stops the flow of the water through the piping. This condition is readily controlled by using piping of sufficient size so that the force of the water, flowing through the pipe, will drive the air down the pipe. The entrance to the pipe, at the source, should be protected by a wire screen to prevent earth, stones or other refuse from entering the pipe. The spring can be enclosed by a wooden or cement box, to which the piping is connected about 3 to 5 inches from the bottom.

Best Arrangement for a Plumbing Installation.

The most desirable plumbing system is to have all plumbing fixtures installed above each other rather than at opposite sides of the house. The bathroom, if possible, should be placed above the plumbing fixtures in the kitchen, and these placed

over the fixtures in the cellar. This requires one waste pipe and the fixtures are relatively close to it so that the discharge pipes are short and have a good fall.

It is a common practice in the country to install a plumbing installation without an air vent, but it is prohibited in the city. All installations should be properly vented as they are liable to produce foul odors in the house.

The pump and compression tank may be situated in the cellar, over the well or in a pit a short distance down the well. There is less danger of the pump freezing in the cellar, and it is to be preferred to the other forms of installations. If the pump were liable to freeze the pump cylinder should be drained each time after pumping. This is not very desirable since the pump, being automatic, only operates for a short period at a time.

Cost of Plumbing Fixtures.

The following table gives an approximate cost of a standard plumbing system for a farm home.

Lavatory complete	$24 50
Closet complete	35 00
Kitchen Sink	25 35
Laundry tubs	55 00
Bathtub	66 50
Septic tank, not including labor	65 00 to $75 00
Hand Power Compression System	145 00
Electric Power Compression System	190 00
Thirty Gallon Boiler	12 50
Roughing in material including plumbers' labor for installing fixtures exclusive of septic tank	195 00

The Septic Tank.

Sewage disposal systems for the farm may be divided into two general classes; one adapted to homes equipped with water systems and plumbing fixtures, the other to homes without these modern conveniences. In the former we have two types, the septic tank system and the cesspool, in the latter, the ordinary outside closet and the chemical closet.

The septic tank is Nature's own way of disposing of sewage. It is an underground tank built of cement and consisting of two compartments. The sewage enters the first compartment where it is partially decomposed by the action of certain bacteria existing in itself. As the first chamber fills, the sewage flows into the second chamber where it is further decomposed by bacteria of the air. From this chamber it is emptied periodically, by means of an automatic valve or siphon into a system of field tiles, through which it is distributed through the soil and rendered completely harmless by the action of soil bacteria.

Complete instruction for the building of a septic tank will be found in Bulletin 267.

The Cesspool.

Before the advent of the septic tank the cesspool was the only method of sewage disposal for farm homes equipped with plumbing fixtures. In its original and simplest form it is a hole in the ground 8 to 10 feet deep and 4 to 6 feet in diameter, lined up with field stone and safely covered with timbers, plank and earth. The sewage is discharged into this and partly decomposes, and in the liquid form slowly seeps away into the surrounding soil. As it was a frequent

occurrence for this form of cesspool to overflow, the idea was conceived of improving it by building an enclosed trough around the edge of the pit near the top of the ground and connecting it to rows of field tile, radiating out like the spokes of a wheel, and the liquid was conveyed from the pit to this trough by a 3 or 4-inch pipe between them, turning down a foot or so into the contents of the pit. This is the second form of the cesspool.

One serious objection to the cesspool has already been referred to, namely its overflowing. This condition may be due to a very heavy and poorly drained subsoil, or to too small a pit, or both. The installation of tile already referred to will prevent this trouble for a while, but they soon fill up by the constant dribbling into them of liquid and fine solids. Another bad feature is that wells may be contaminated by the underground seepage from it and, as this seepage may be carried great distances through small channels and the various forms of passages through the soil and rocks below the surface, there is ever a lurking danger not only to the water supplies near by but even to those more remote. If the subsoil be very gravelly and well drained, and one could be absolutely certain that there was no chance of the seepage endangering the water supply or reappearing somewhere at the surface as a public nuisance, there could be no serious objection taken to the building of a cesspool, but as the possibilities of trouble with it are so great we cannot recommend it to the general public as a safe and satisfactory method of sewage disposal.

Chemical Closets.

The chemical closet in its simplest form has a small wooden or metal chamber enclosing a pail-like receptable, the top of the chamber constituting the seat. The firms that manufacture the closets supply their own chemicals. The chemical substance added to a little water is put into the receptacle as it is required, and this solution changes the raw sewage into a harmless and inoffensive product called sludge. The receptacle is removed and the product emptied out upon the ash-heap whenever it becomes full or the chemical is exhausted.

The chemical closet has many advantages over the outside privy. It is located inside and for this reason is greatly appreciated in the winter time, it is more sanitary, it is not infested with flies that may carry disease germs about to endanger health, and it is cheap to install and easy and cheap to operate. Since Boards of Health recognize their value and recommend them . . . as do those who have used them in their homes . . . they surely deserve favorable consideration in this treatment of methods of sewage disposal for rural homes. Ask your plumber or hardware dealer about them.

COURSE IN HOUSEHOLD LABOUR SAVERS.

A Demonstration-Lecture Course has been arranged covering Household Labour Savers, Kitchen-Planning, Methods of Cleaning, Cleaning Materials and Utensils, Laundry work, Interior Decoration and House Furnishings. During the past year Mrs. Greer of Toronto has given this course in various places throughout the province, in some cases spending just two days at one centre and dealing only with the labor-saving equipment, methods of work, and laundry. In other places a two-weeks' series of lectures has been arranged. In view of the demand for this service the Department hopes to extend it during the coming year.

INSTITUTE SCHOOLS HELD AT LONDON AND TORONTO.

The first Women's Institute School in Canada was held at London at the conclusion of the Convention in 1920 under the direction of Mrs. A. Watt, M.A., M. B. E., organizer of Institutes in England; the second, at the conclusion of the Toronto Convention of the same year under Miss Emily Guest, M. A., organizer of Institutes in Scotland. These schools were one of the most interesting and valuable parts of the Convention, and the likelihood is that a number of such schools will be carried on throughout the Province in the near future. Some of the features discussed were:—

The Aims and Objects of the Organization.
How to start an Institute.
How to get attractive meetings.
How to plan the Programmes.
The Duties of Officers.
Election of Officers, etc.

A splendid address on Business Procedure was given by Mrs. H. W. Parsons at the School held at Toronto. Some of the information given has been included in the Report which follows.

As an introduction, the history of the Women's Institutes was traced briefly, from the first one started by Mrs. Hoodless at Stoney Creek, Ontario, over twenty-five years ago, through the organizations established in the rest of the provinces, the United States, Ireland, England, Scotland, Belgium, Poland, Italy and Finland—all "children" of the Ontario Women's Institutes. A few of the outstanding points brought out at both schools appear below.

AIMS AND OBJECTS:

These must be thoroughly understood by the members and clearly impressed upon others, to get better homes, better farms, better communities, better teaching of Agriculture, to stimulate home industries and co-operation and develop community centres. They are really educational. The fact that some institutes have become mere money-making organizations shows that their aims are not understood. The Institute does not exist to supply other organizations with funds. That was allright during the war, but now let other organizations "run their own show." A good plan is to have the aims and objects printed on the backs of the programmes. Another good plan is to have something in the papers occasionally to let people know what the Institutes stand for.

HOW TO GET ATTRACTIVE MEETINGS. Conduct all meetings in a business-like way and sometimes make a feature of putting on a demonstration or a model Institute Meeting. Make everyone work. In a case where you have timid and bashful members whom you know have talents along lines of value to the meeting if you could only bring them out, it is a good plan to go to them before the meeting and tell them you want them to have a word or two to say upon the subject under discussion. In this way latent powers and new forces are often added to the membership. Have demonstrations, and a place for anything anyone has done well, e.g. drawing, home millinery, etc., community singing, music by the girls, occasionally the best speakers that can be found. Get subjects that try out everybody's talent. Have a programme to suit everybody, something to hear, to see and to do. New-comers introduce a new interest in the work.

Dramas, Debates, and Discussions were recommended. The Department of English of the Ontario Agricultural College, Guelph, will furnish pamphlets with suggestions for Debates and a list of Plays for the Country.

In planning the programmes, first appoint a programme committee. Have every member hand in or offer suggestions for the programme, then the programme committee should arrange the programme and present it to the members for their approval before having it printed. A good rule is to be kind with amateur speakers, but to insist on professional speakers maintaining a high standard.

Starting an Institute. Make a survey of the field, considering all the possibilities—who can be relied upon to help, etc. In making this survey it is always well to consider what other organizations are doing, because it is important to work in harmony with them. Keep in mind always local needs; it would be folly to get up community work that no one needed. One of the first people to interest before forming a branch is the teacher, whether that be a man or a woman. A man will do all he can to foster an organization when he is told that such stands for better homes, better food, etc. Interest the leaders in the community. The clergyman's wife is nearly always a good woman to interest, particularly when she realizes that an Institute will be a help to church work. It is well sometimes to have a preliminary meeting; it may be a small afternoon tea given by an interested woman, when those present may be informed of the aim and objects of the Institute and asked to speak to as many of their friends as possible regarding the formation of a branch. It is a good plan to send the names of a few of the interested women to the Department so that any recent bulletins issued and Annual Convention Reports may be mailed to them.

Get in touch with the Agricultural Representative to find out when Short Courses are being held and a survey of possibilities can be made in this way. Sometimes an Institute can be formed where a Red Cross Society formerly existed.

Where there are a few interested in Institute work, but no Institute exists, the District Officers can arrange with the Department to have the lecturer visit and address them during the summer series of meetings.

Institute Programmes. Considerable information regarding programmes has already been given under "How to Make the Meetings Attractive." Demonstrations are always valuable . . . such as home millinery, dress-making, buttonhole making, fancywork, etc. Subjects dealing with Health Problems, Foods, The Child, The School, Community Effort, Home Management, Citizenship, How we are Governed, Canadian History, Music, Literature, Current Events, etc., are always of interest and value.

Provide for continuity of the educational work. Guard against repetitions. We should try to work from the known to the unknown, from the narrow to the broader.

When planning the programme do not forget your outstanding local men, such as doctors, lawyers, professors, ministers, school teachers, bankers, who might be expected to give assistance. An exchange of programmes with neighbouring Institutes is always helpful.

Duties of Officers.

President. Her duties are to preside at meetings, to assume responsibilities, to carry out special obligations when necessary, to keep the society together and everybody working. Her own duties in actual work, should be light, but she must keep in touch with all that is being done. She should be a woman of vision, should see possibilities and should direct chiefly by suggestion. It is a fatal mistake for the President and Secretary to do all the work. The president should preside at all meetings, and is by virtue of her office a member of all committees.

The best president is tactful, sympathetic, sides with no one. As presiding officer she often has a lot of social work to do. Often she has to give the welcome that will make a speaker speak well. It is a mistake for the same president to stay in office year after year.

Secretary. She may retain the position year after year, in fact this is often desirable. Her duties are heavy, attending to all correspondence, but she should never answer letters without consulting the President and Executive. She should try, when writing the minutes, to express what transpires as clearly and as briefly as possible. Personal opinion, suggestions, etc, must not be recorded. The secretary must be methodical. Books, letters, records of various kinds should all be before her at the meeting. The time of the meeting should never be taken up in looking for a letter which the members have occasion to refer to.

Resolutions should be written by the person moving the same and handed to the Secretary. Members should give the secretary all correspondence. It is not advisable to separate the office of of secretary and treasurer for a small branch. The Treasurer has no right to pay bills that have not been before the meeting, except postage, of which an exact record should be kept.

The Executive is composed of the President, Vice-Presidents and Secretary and its duties are to carry out things decided by the whole Institute or Board.

Board of Directors. This Board is provided to make sure of any ground that is to be covered. It may be given power to prepare programmes, etc, without referring to the whole meeting. The Executive gets directions from the Board and the Board carries out the wishes of the whole Institute. In the matter of appointing delegates to a Convention, however, it is a matter for the whole meeting to decide. In any Institute there should be three directors and an additional one for each twenty members over twenty-five.

Committees. Members of Committees should be "good mixers." They are expected to carry out any work entrusted to them, to take a lead in competitions, to maintain the aims and the ideals of the Institute, to see to the mental and physical comfort of each member, not forgetting the shy members, to be a safeguard against impractical things by thoroughly considering them and making recommendations.

Elections. Election should be by ballot, allow every member to nominate and send the nominations to the committee or whoever is appointed a month before elections. Ballot papers are then prepared with every name sent in and the election is held at the annual meeting. This is the most democratic way.

At the annual meeting appoint scrutineers, and place one outside the polling booth, one inside. The voter marks her ballot by placing an "X" opposite the name of the person desired, folds the paper and puts it in the ballot box. Afterwards the scrutineers read the results, put the name on the board and destroy the ballots. It is well always to have ballot slips initialled by the secretary so that you can be sure of the number returned and the validity of the same. In election of officers, nominations cannot be received after ballots are distributed. Nominations do not require seconding.

PROGRAMMES OF STANDING COMMITTEES.

The success and value of Women's Institutes is due, in large measure, to the fact that the Institutes have been required, in order to secure assistance from the Government by way of lectures, literature and grants, to carry on a certain

amount of work through the utilization of local talent and resources. They have been much encouraged and assisted in their work through the co-operation made possible by establishing standing committees. It is to be hoped that the outline of possible activities as given below, will be found of real worth to the Institutes.

It is not expected that any one Branch will form Committees for each of the lines of work outlined. In nearly every branch, it will, no doubt, be found advantagous to form two or three Standing Committees, and in many cases a larger number. Practically every branch will be interested in Education and Better Schools, Health Problems and Home Economics, and might well consider the advisability of forming Standing Committees to deal with these features, and whatever other line or lines appeal to a majority of the members.

Education and Better Schools.

Home and School Committees. The Institutes can link up the homes with the school by forming Home and School Committees. Where two or three school sections are represented in one Institute, a committee of, say, two from each section could be appointed to visit their own school, assist in securing the necessary teaching equipment, pure water supply, facilities for washing, sanitary conveniences, suitable decorations, flowers, introduction of games, etc. It should be the aim of every Institute to inform the parents as to conditions in the school and to enlist their co-operation in securing the needed improvements.

School Improvement. The possibility and practibility of Consolidation should be considered in every rural district. Where there is no prospect of immediate results, then attention should be given to making the best of existing school-houses. With very little cost improvements can be made which will mean much to the children of to-day from an educational, health and moral stand-point. Immediate results is what the Institute is looking for. Branch Institutes should write the Department of Education for information on Consolidated Schools and get in touch with the local inspector regarding improvements in the present building.

School Attendance. The Institutes can do much to see that all children up to sixteen years of age are attending school.

Efficient Teaching. It should be the aim of all Institutes to see that competent teachers are secured and retained for the rural districts, and that agriculture, household science, and manual training are introduced wherever possible. The Institutes can often be of material assistance in securing a suitable boarding house for the teacher.

Hot School Lunch. Many Institutes have been instrumental in introducing the hot school lunch in rural schools. Full particulars as to how this may be done and assistance offered may be secured by writing to the Department of Education.

The School House should be made a centre for community activities, including study, games, and amusements for the grown-ups as well as the children.

Every home should have access to a library through the school or by means of circulating books if there no other provision made. Where permanent libraries are not established application should be made to the Department of Education for use of a Travelling Library.

It is well for the Institutes to keep in touch with the various country educational associations and to see that the mothers are represented on the school boards.

Health.

The Programme of the Committee on Health shall be:

1 .To stimulate interest in the conservation of Health. It is proposed to ask each branch to devote, at least one meeting each year to the study of health, paying special attention to the subject of nutrition. Your Committee is pleased to contribute a certain amount of material to assist in the preparation of papers for the Health Meeting, but we would suggest that the members themselves contribute most of the programme. It is often very helpful to have the local doctor or the Public Health Nurse or the School Nurse give a talk on the health problems of the community and the part the institutes can take in aiding in Public Health work.

2. To promote the circulation of helpful literature on health and hygiene. The Provincial Board of Health is prepared to furnish literature on contagious diseases, social hygiene, care of the baby, sanitation, sewage disposal, house ventilation, and leaflets upon various other subjects. The Committee suggests that the institute also have ready for distribution at the Health Meeting such pamphlets as "The Baby Book," published by the Ontario Department of Health. "The Canadian Mother's Book," and "The Little Blue Books," prepared by Dr. Helen MacMurchy and distributed by the Department of Health, Ottawa; and leaflets on "The Value of Milk," published by the Provincial and Dominion Departments of Agriculture.

3. To promote a more general understanding of the principles of nutrition, especially the importance of an abundance of milk and green vegetables in the diet; and a study of the nutritive values of our common wholesome foods in these days when food is being so highly commercialized.

4. To encourage a study of the health laws of the community, the Province and the Dominion. The Committee suggests, however, that too much stress be not laid on the law as related to health. We can never legislate a people into being healthy but we can educate them into health habits and nature will do the rest.

5. To encourage the holding of study courses in Home Nursing and First Aid.

6. To co-operate in making school medical inspection of the greatest value, and to assist in placing permanent nurses in the rural sections of the Province.

Home Economics.

The programme of the Committee on Home Economics shall be:

To maintain the first ideal of the Women's Institute organization—the welfare of the home and progress in the profession of home making, by:—

Extending the study of Household Science through Demonstration Lecture Courses in "Foods and Cooking" and "Sewing," through the circulation of helpful literature on various phases of homemaking, and through addresses, discussions and demonstrations by local members.

Demonstration in nutrition such as balanced menus, proper meals for children, and school lunches make instructive exhibits at fairs and other community gatherings.

Home beautification, house planning, furnishing and decorating, labor savers and conveniences for the country home, home sanitation, hygiene, and the care of the family should be given an important place in the programmes for the year.

The Committee suggests that the local institute be a clearing house in the community for the distribution of home economics literature issued by the Department, and would remind the members of the loan collection library which is at their service at Macdonald Institute. This collection includes bulletins and articles on The Family, The House, The Garden, The Farm, The School, Country Life, Roads, Electricity, Water Supply, The Community, Literary Societies, Debates, Books and Reading, Entertainment, Games, Recreation, Education, Holidays, Citizenship, Immigration, Rural Credit, Government, Social Service, Travel, Women, Fairs. Individual members may receive packets bearing upon any of these lines by writing to The Library, Ontario Agricultural College, Guelph. The packet must be returned to the college in good condition at the end of two weeks.

Agriculture.

The first industry in the world was agriculture and it remains the main one to-day. Encourage better and more scientific methods wherever and whenever possible in your locality.

(1) *Income Producing Features.*—Encourage the side lines in farming—bee keeping, poultry raising, small fruit growing—by interesting more people in them, sharing plants, seeds and bulbs.

Give the children interested a setting of eggs from your prize fowls, and encourage them to compete at the fairs.

Find a good market for busy mothers where they can dispose of fresh eggs and broilers for cash.

Encourage the use of vacant lots by poor people for gardening purposes.

(2) *Educational.*—Encourage the establishment of school gardens, or school directed home gardens by co-operation in making, care, and the provision of a supply of seeds.

Help with the School Fair.

Give prizes at the fall Fairs for Juveniles.

Aid in establishing Playgrounds and Community Parks.

See that there is a pure water supply for the school.

(3) *Beautification.*—See that roadsides are kept free of weeds, and rubbish. Encourage the improvement of lawns, the planting of trees, shrubs and flowers, and the making of window boxes.

Divide with your neighbors beautiful shrubs, perennials, surplus seeds and seedlings.

Give the children a plot of ground of their own, and a few seeds of easily grown flowers.

Take time to teach them to protect the trees, and to see the beauty of growing plants, the budding trees, the birds' nests and the sunsets.

Have community bees for the cleaning of cemeteries, school grounds, and waste places.

Encourage in villages the disposal of disfiguring fences between lots, and the marking of divisions by strips of flowers.

Arrange for illustrated lectures in the community in Horticulture and Agriculture.

Consult available publications on Agriculture, especially Dairying, Fruit and Vegetable-growing, Bee-keeping, Poultry-raising.

(4) *Co-operative Marketing.*—Devote some time to those features which will interest a majority of your members.

Immigration.

The programme of the Committee on Immigration shall be:

(1) To secure as full information as possible of immigration families settling in Ontario, or girls or women employed as domestics, etc., in homes throughout the Province from:—

1. The Colonization Department of the Ontario Government.
2. The Employment Labour Bureau.
3. The Soldier Settlement Board.

(2) To secure as full information as possible re children being placed in Ontario homes from:—

1. The Children's Aid Society.
2. The Barnardo Homes.
3. The Salvation Army, etc.

The Branches will be notified from time to time as to the placing of the newcomers, with a view to having the Institute members give them a welcome and invite them to take part in the work of the Institutes and other local activities.

To have Branch officers forward as full information as possible re the situation in their localities as to the number of newcomers, how they are placed, what is being done for the Children's Aid Society, etc., to the member of the Committee on Immigration for their respective sub-divisions.

To educate through articles written and through lectures, etc., the importance of getting in touch with the newcomers and leading them to realize that they have a part to play in advancing community interest.

To see that the children of immigrant families or those placed in homes by the Children's Aid Society, or the Barnardo Homes attend school regularly.

To report all cases of cruelty, overwork, etc., on the part of those employing help, to the proper authorities.

To report all cases of children or parents suffering from contagious or infectious diseases, or who are mentally deficient, to the proper authorities and where necessary take any other action thought advisable.

To co-operate with the Children's Aid Society in securing good homes for the children for adoption and to take an active interest in supporting local Children's Shelters.

To co-operate with the Girls' Camps in their social activities and to see that no camp is started without a permit from the Government Employment Labour Bureau.

To familiarize all with the Immigration Laws.

A new problem which is facing several districts, is where old Ontario homesteads are being purchased by foreigners who have different ideas about home-making, different customs, and in some instances, speak another language. If these are coming to live among us, they should be welcomed to our home-making study centre where they may imbibe the highest ideals and methods regarding home-making, and their children become citizens who will be a credit to the community.

The members of the Committee should forward reports of the work done along immigration lines in their respective subdivisions to the Convener, for publicity and other purposes.

Publicity.

The programme of the Committee on Publicity shall be:

1. To try to influence secretaries and branch members to announce meetings to the community through the local press and over the telephone. This stimulates both interest and a full attendance. Members can do much to extend the influence of their institute by personally inviting non-members in the neighborhood to attend meetings.

2. To encourage the practice of sending detailed reports of meetings regularly to the local press. Sometimes a special publicity secretary is appointed, usually a girl who likes the practice in newspaper reporting, or the work may be done by the regular secretary.

3. To get secretaries, or other members of institutes, or lecturers and demonstrators to report either to the Department of Agriculture or the Convenor of the Publicity Committee, any news of province-wide interest, such as unusual or especially meritorious lines of work done by any institute, that this may be circulated through the "Home Journal" and the local and farm papers of the Province. Any special feature of work done by one institute should be an inspiration to others. News of every good community or public benefit effort should be sent to the editors of the Women's Section of the city daily papers. The knowledge that rural women and city women are working along similar philanthropic lines will do something to create a better understanding between the city and the country. To impress every institute member with the publicity value of photographs of institute gatherings, demonstration lecture classes, pictures showing institute work in connection with schools or other community enterprise. Editors are always ready to publish good photographs, and the picture often makes an impression which an article alone would not make.

Girl's Work.

All Girls' Institutes and Clubs have already been supplied with suggested programmes and directions for making their work more effective. Any Branch interested in Girls' Club work will be supplied with information and suggestions upon making application to the Department. Girls' work as well as that of the other committees will be quite fully outlined in the annual report now in course of preparation, which will be mailed to every member.

Resolutions

Branch Institutes or individuals which have resolutions to be considered at the Convention next fall, should send the same to the Chairman of the Resolutions Committee for the Province, Mrs. Chas. Macoun, Campbellford, at once, so that the same may be considered by the Resolution Committee before the Branch and District Annual Meetings are held, thus giving each organization an opportunty to instruct its delegates to the Conventions as to the attitude to take towards each Resolution.

Legislation.

Recommendations or suggestions regarding legislation should be sent to the chairman of the Committee at an early date, so that the same may be considered by the individual Institutes before the next Conventions are held.

PROVINCIAL STANDING COMMITEES.

Education and Better Schools—Miss K. F. McIntosh, Brampton.
Health—Dr. Margaret Patterson, 97 Walmer Rd., Toronto.
Home Economics—Miss O. Cruikshanks, Macdonald Inst., Guelph.
Agriculture—Mrs. R. G. Leggett, Newboro.
Immigration—Miss E. J. Guest, Dept. Agriculture, Toronto.
Girls' Work—Miss Alice Thompson, Clayton.
Resolutions—Mrs. Macoun, Campbellford.
Legislation—Mrs (Dr.) Downing, Ottervile
Publicity—Miss E. M. Chapman, Dept. Agriculture, Toronto.

The Province has been divided into five districts for convention purposes, and Committees have been named as indicated below for these districts. In cases where a chairman is not named for any section of the Province, correspondents may communicate direct with the Provincial Chairman.

Central Ontario.

Agriculture—Mrs. W. Buchanan, Ravenna.
Girls' Work—Miss Isabel A. Shortreed, R.R. No. 3.
Resolutions—Mrs. Jas. Gardner, Owen Sound.
Legislation—Mrs. W. R. Munro, R.R. No. 3, Domerestville.
Publicity—Mrs. B. J. Long, Meaford.

Western Ontario.

Education & Better Schools—Mrs. J. McLennan, Sarnia.
Health—Mrs. M. Bray, Mapleton,
Agriculture—Mrs. W. Sutherland-Ross, Embro.
Immigration—Mrs. W. T. Meade, Blenheim, R.R. No. 2.
Girls' Work—Miss Nora Tanner, Paisley.
Resolutions—Miss A. Coutts, Thamesville.
Publicity—Mrs. J. M. Brunt, Kerwood

Eastern Ontario.

Education & Better Schools—Mrs. R. H. Grant, Hazeldean.
Health—Miss Annie Jamieson, Renfrew.
Agriculture—Mrs. R. G. Leggett, Newboro.
Immigration—Miss Jean Muldrew, Ottawa.
Publicity—(Executive to choose.)

Northern Ontario.

Education & Better Schools—Mrs. Wm. Hunt, R.R. No. 1, Webbwood.
Health—Mrs. A. H. Willett, Cochrane.
Agriculture—Mrs. M. J. Nixon, Sault Ste. Marie.
Immigration—Mrs. W. McKnight, New Liskeard.
Girls' Work—Mrs. Graydon, Kent, Kentvale.
Resolutions—Mrs. A. Trowbridge, Big Lake.
Legislation—Mrs. M. E. Freeborn, Magnetawan.
Publicity—Miss Teresa Gough, R.R. No. 3, Powassan.

Northwestern Ontario.

Education & Better Schools—Mrs. B. O. Allen, 629 S. Vicken St., Fort William.
Health—Mrs. A. McTaggort, Fort Frances.
Agriculture—Mrs. D. Hutchison, Dryden.
Immigration—Mrs Shirk, Fort William.
Publicity—Mrs. C. M. Ricci, Rainy River.

The institutes which are carrying on work not reported upon in this leaflet should send a statement of the same to the Convenor of the Committee for the section of the Province in which the institute is located or to the Provincial Chairman. Suggestions for new lines of work or new methods will also be appreciated by the Chairmen of the committees.

THE REPORT OF THE STANDING COMMITTEE ON AGRICULTURE.

Mrs. R. G. Leggett, Newboro.

Agriculture is a many-sided subject, and the part assigned to the Agriculture Committee is that of taking up a few of the things that women can do that the men are inclined to overlook.

Are we doing our duty by the child when we send it through the years in which it requires the greatest care to a bare, cheerless school-room with a cold lunch, to be eaten or thrown around the yard as the case may be?

Give the children a plot of ground in which they can raise a few flowers and vegetables. The school-garden will give them the proper sort of exercise. Planting the seeds and watching their growth will give them the clean, pure interest that is always io be found in nature. The vegetables will provide them with the nucleus for a great many nourishing hot dishes. You will find that the children will not confine their efforts to the school garden alone but will experiment at home. The whole family will become more interested and better gardens with a more liberal use of fresh vegetables throughout the whole community will result. There are a great many foreigners throughout our Province whom we wish to Canadianize as quickly as possible. There is no better way than by teaching their children through the school garden to raise the vegetables and through the hot lunch the proper methods of preparing them for the table.

The Agricultural Committee would like to help the farm women to make some extra money. There are thousands of dollars worth of honey going to waste in Ontario every year because there are not enough bees to gather it. Why not keep some bees? If you are not acquainted with bees and their habits, begin with one colony which will soon give you a number of colonies. Buy your bees in the fall, making sure that each 8-frame hive weighs at least 50 lbs. Winter them in a dark dry place and you will be ready for business next year. Invite some one who is an expert at beekeeping to address your Institute on Handling Bees. Poultry raising is another money maker. Secure a speaker on Poultry Raising. Pure bred stock can always be obtained at reasonable prices from the Experimental Farm of the Ontario Agricultural College.

Strawberries, raspberries, grapes and other small fruits are all money makers. Be sure that all articles shipped are first-class, and when you have established your reputation for quality and quantity you will have no difficulty in getting the best grocers in your nearest town to pay you the highest price.

Then we wish to beautify our country homes. Some yards appear to be the dumping ground for all the rubbish on the farm. Very often the grass is not cut in the front of the house. God has given us one of the most beautiful countries in the world and He expects us to keep it beautiful.

Clean-up Clubs have been organized in many villages. Why not in every village? Why not cultivate the vacant lots instead of letting them grow weeds? Some Institutes are giving prizes for the best kept lawns. Can we get the farmers to keep the roadsides free from weeds?

Do not let a year pass in which nothing is done to beautify your home and surroundings. Plant a shrub, a perennial plant, or make a window-box or a hanging basket. Have a few trees but not too many. These things are small, but they will change a cold, barren exterior into a cosy, homey, livable place that you will be proud to call home.

REPORT OF STANDING COMMITTEE ON IMMIGRATION.

Mrs. Sutherland Ross, Embro.

The Committee on Immigration is endeavouring to make its programme and work as practical as possible in order that some form of service to the new comer and those requiring assistance may be given continuously.

The Committee upon its formation got in touch immediately with the Home Branch of the Soldiers Settlement Board, and secured from them a list of the names of all returned soldiers placed on farms throughout the Province. The district officers of the Institutes were then notified of all soldiers located within their district and requested to notify the Branch nearest each home in order that the officers might get in touch with the newcomers at once and invite the wife into the Institute. The Committee feels that a splendid service may be rendered in this way as the newcomer appreciates the clasp of a friendly hand, a few words of cheerfulness and a sympathetic understanding of their needs.

The Institute members have already done much to assist the Soldiers Settlement Board in holding successful Short Courses in Domestic Science, Home Nursing, Sewing, etc for the soldier's wives at various places by providing enertainment and a warm welcome. Many Institutes have made layettes, and others have provided clothing for several families requiring the same for a little while to tide them over their first season on the farm.

The Committee also got in touch with the Ontario Government Employment Bureau, particularly that dealing with the Farm Women's Department, and was informed that this Department was having considerable anxiety in placing women in the homes, particularly as housekeepers, owing to the fact that they did not know the character and community standing of those making application. The Committee was given a list of all applicants and immediately wrote to the nearest Institute to get the desired information. The following extracts from letters received from the Directors of the Farm Women's Department proves that this assistance was appreciated:—

"I thank you indeed for the very efficient co-operation you have given me in reporting so readily the character and community standing of some who have applied at this office for Domestic help. The value of these reports is increasing daily, not only does it assure the workers that they will be protected, but it gives me added confidence in my effort to place the women on farms so that they will be content and happy."

The Committee is endeavouring to, "mother" homeless children not only by securing good homes for them, but also by protecting them from cruelty and overwork, and seeing that they are given an opportunity to attend schools regularly. Several chidren have already found good homes and good mothers among our Institute members and letters are coming in from time to time stating that they would like to secure a little child for adoption. The Committee believes that no greater service can be rendered by our women than by mothering these lonely little ones and giving them a good start in life.

WHAT THE INSTITUTES ARE DOING.

The Alliston Memorial Library.

By E. M. Hurst.

At the close of the war, when there was everywhere talk of memorials, Alliston also had its heroes, and we did not intend to forget them. The question was, what form was our Memorial to take? We needed many things, but most of all we needed a library. Just a tablet of stone and wood did not appeal to us, we wanted a memorial that would recall to us our victorious dead, but one that would give service to the living as well, so what more suitable than "A Memorial Library."

With this object in view, The Women's Institute started to work in real earnest. We got in touch with Mr. Carson, Inspector of Public Libraries, and he gave us all information regarding the establishing of a library. We had on hand about two hundred dollars that we could start with. The active members of our Institute formed our Library Board. We rented a room, put in some furnishings to make it as attractive as possible, so that it might be a reading room as well as a library. We bought one hundred and fifty dollars worth of books, being very careful in our choice, keeping our fiction down to 40%. We also got three Travelling Libraries from the Department, and with these we opened our Library just two years ago.

We have endeavoured to put on our book-shelves only the best books, and have been particularly careful of the class of literature our young people read. We have a paid Librarian, and our Library is opened every Tuesday and Saturday afternoon and evening. We put on a special effort to make "Canadian Authors' Week" a vital thing in our town, to show our readers that we can get the very best right here in Canada. We have a "Story Hour" which meets Saturday afternoon for children from six to twelve, and have had an average attendance of twenty-two, the "Story Hour" is conducted by the Secretary. We have on our shelves over 1,000 volumes and a membership of 260. If you could drop into our Library on a Tuesday or Saturday night I think you would realize just what it has meant to Alliston and how very much worth while it has been to work for it. Every returned man, his wife or family are free members and are always made welcome.

You may ask how we maintain our Library. Our town council have granted us four hundred dollars a year. We get a small County grant. Our Government grant, last year, was $148.60, and we charge a small fee of 50c. a year. Then we have given plays, held candy sales on a Saturday afternoon in our Library, and this winter we are running the picture show, showing some educational films every week, which we also got from the Department. We have bought and paid for our property, on the main street, and have on hand about $1,000 with which we hope to start building in the spring "Our Memorial Library."

One Year's Work at Beeton.

The Beeton Women's Institute is an outstanding example of what an institute can accomplish in one year's work. It is also noteworthy for its influence in bringing together the people of the town and the country. The splendid co-operation between the town women and the farm women in this locality is not entirely within the membership of the Beeton Institute, but also in the way this institute and the six neighbouring rural institutes go in together in a great deal of their community work.

One of their first projects was to get the Public Health Department to give them a demonstration in public health nursing, sending a nurse to stay in the district and do community and school nursing for three months. They held a child welfare clinic, taking in the children of the whole township, had the nurse's services for the three months, and out of this hope to bring about the establishing of a permanent school nurse.

Last summer the Beeton Institute arranged a pageant—"The History of Simcoe County." The children and young people from the village and the farms were trained in a specially arranged historical play, in songs such as "To Thee Be Victory, O Pioneers," and folk dancing including an Indian dance. They had an outdoor stage, with wings and back of solid cedars, an afternoon of sports and a parade of floats. All the pioneers of the county were specially invited guests, and Premier Drury spoke on "The History of Simcoe County."

Every Christmas the institute has a rather unusual "Christmas Tree." The children of the Beeton school and of all the neighboring school sections are trained in singing the old Christmas carols. The tree is set up out of doors, and electrically lighted. The children come and sing their carols, and people from the whole neighborhood bring supplies for the Shelter, ending up with a Santa Claus and the children tagging after him, going to all the town merchants for donations, and afterwards a hot supper in the Hall for everyone.

The Beeton Institute has had three Demonstration-Lecture courses in Foods and Cooking, Home Nursing, and Dressmaking. In the Cooking course they had splendid co-operation from the High School. They have also brought in several outside speakers for the benefit of the whole town. Mrs. Pankhurst and Dr. Gordon Bates from the Social Hygiene Council were brought in to address a meeting of mothers in the afternoon and an open public meeting at night. Last winter they had a University Extension Lecture Course in English Literature and music, the lecturer in literature, and the music instructor coming one night a week on alternate weeks. The Bond Head Institute was so taken with the idea that it applied for the same course and got it, the course in music closed with a big musical concert by the Bond Head and Beeton Classes, and the professor in English concluded his course with an illustrated lecture on "The New Empire." This lecture was made free to the whole community, to popularize the course for next year.

Last fall the Beeton Institute arranged a convention inviting in the six institutes around. This was at the close of the cooking course, so they had a banquet and made it a very nice affair socially. At the evening meeting they had addresses from Prof. Reynolds and Mr. Segsworth, and out of this meeting there developed a series of community meetings with the view of bringing together the town and the country. One of the important things taken up at these meetings was the consolidated school question. A new school is being built in Beeton, and the townspeople hoped the country people might decide to go in with them as a consolidated school as otherwise, the "part time clause" of the Adolescent School Act coming into force in 1923, would make it necessary for some of the rural schools to add extra rooms and equipment to take care of their "part time" classes.

But this institute does not depend entirely on outside help for its educational work. They have their own monthly meetings regularly, when the members have their own addresses and papers and discussions. This year's programme includes such subjects as "The Prevention of Disease," "Music in the Home," "Different Methods of Preparing Eggs," "Poultry" (by the county Agricultural

Representatives) "Duties of Parents to Children," "The Twentieth Century Boy," "The Evolution of a Farm Woman," "Pickling and Preserving," "The School and Home," "Cultivation of Flowers," "Canadian Authors," "Christmas Candies," "A Well Planned Day," "How to Raise a Family." Their September meeting will be held in the new school, when they will have the principal and a member of the Board speak to them about their duties to the school. In November their meeting is made a social family gathering with the men of the neighbourhood invited, and they have the reeve address them on their duties to the community. These meetings of course do much to create a closer sympathy between the Institute and the School Board and the Council.

When the institute was organized they secured an unfurnished room in the library as their "club room." They, of course, had no funds on hand and the problem of getting chairs rather troubled them, so they asked each member to bring her own chair to the first meeting and to leave it. In this way they managed to get their room seated without expense. Since that time, as their membership and their funds have increased they have bought extra chairs and a phonograph. This winter they developed a very popular feature in the "Club Room," in the way of a "Story Hour" on Saturday afternoons. It is typical of the spirit of this institute that they should get the teachers and pupils of the surrounding rural school sections interested in this. Rural teachers as well as those in town take turns in conducting the games and story telling and kindergarten work for small children. They have also bought several phonograph records from the operas with stories of the same to help the children toward an appreciation of good music.

In work outside their immediate community the Beeton Institute is concentrating chiefly on work for the county Children's Shelter. They always send donations of canned fruit, clothing and candy at Christmas time and are sending a supply of fresh eggs for Easter. They are thinking of opening their club room one evening every month to do sewing for the Samaritan Club—not just for the sake of the club itself, but because there are some women of limited means in the town who feel that there are many things they cannot do for the institute but who would be glad to help in this way. These meetings will be open to everyone and should bring all the women of the town together.

GLEANINGS FROM REPORTS PRESENTED AT CONVENTION.

NOTE: These reports do not begin to cover the work done by the Institutes during the year. They are merely some of the outstanding features gathered from the reports presented at the conventions.

EASTERN ONTARIO.

The representative from *Glengarry County* reports that two Branches have helped to build or repair the sidewalks. Two took advantage of the Travelling Library, while one donated $40.00 to the Public Library. An exhibition of fancy work was given in one Branch while the Young People's Industrial Fair is an annual event in another. Hospitals and Refuge Homes were generously remembered. One Branch raised considerable money by staging a play "Dust of Earth." One Branch held an old fashioned spelling match; another held a "Grandmothers' Day" and one of the grandmothers gave a talk on what the country was like fifty years ago.

In *South Lanark* the Branches have been very much interested in School and Community Improvement. Drinking fountains have been installed in many schools where there were none. Attention has been given to the cleaning of all schools and three are now serving the hot lunch. Halls are being built or renovated and pianos, dishes and other furnishings bought for the halls. One Branch is helping to maintain a Recreation Centre for the girls.

In *South Grenville,* one Branch, (Maynard) has accomplished good work in improving the cemetery. Its greatest work has been the erecting of a beautiful monument to the memory of twenty-one boys who made the supreme sacrifice. This monument cost $1,630 and was all paid for in less than five months. They are now planning for a Community Hall. The Algonquin Institute opened a rest room in Brockville consisting of four rooms, two of which are used as sitting rooms, one as a kitchenette, and one as a lavatory. All well heated and lighted. A matron has been placed in charge. The South Augusta and Mallorytown Branches, only organized a few months, donated $50 towards the rest room.

Athens Institute has awarded prizes for the best kept and most attractive grounds surrounding residences. Trees have been planted around the town hall, seats have been bought and placed on the lawn and window boxes filled with bloom placed in the windows. Steps are being taken for the purchase of a park suitable for a playground for the children. Very often a concert is given by the school children, and the Institute members train them for their different parts. This Institute pays the librarian for the town.

The Institutes in *South Renfrew* District are very much pleased over the Inspection of their schools and are now endeavouring to secure a rural school nurse. The Bonnechere Valley Branch has one of its members on the School Board and is responsible for seeing that the school is thoroughly cleaned once a month, the School Board willingly paying the expenses. A number of Institutes in this district are holding social evenings to which the whole community is invited. Attractive, interesting and educative programmes are presented and supper served. The Renfrew Council has promised the Institutes a permanent Rest Room when their new Municipal Buildings are built. The Clay Bank Branch held a joint picnic with the U. F. O.. at which they cleared four hundred dollars. Castleford Branch, which has installed a complete equipment in the school for serving Hot Lunch and teaching Domestic Science, reports that the attendance at school is now much better.

In *North Leeds and Grenville District,* Burritt's Rapids Branch is devoting a share of its time to making a park out of a piece of Government ground facing the Rideau Canal. Bishops' Mills is improving the cemetery; Easton's Corners has donated generously to charitable calls. Kemptville Institute is pledging itself to give $500 towards the support of the town band. $25 was given to the Horticultural Society for beautifying the municipal property. A large sum of money has been raised through the sale of a recipe book compiled by the Institute members. Merrickville Institute put on a Public Speaking contest, Miss M. E. Pearson (an Ex-Provincial Director) donating a sum of money for prizes.

Northern Ontario.

The *Moose Hill* Institute is busy raising funds to help towards the building of a Community Hall. At the close of the school term this Institute joined with the teachers of the three schools in the locality in holding a community picnic. This Institute prepared an exhibit for the District Agricultural Fair and won third prize.

The *Murillo* Institute took part in the institute competition exhibits at the Algoma Fair, and won second prize which amounted to $15. Ten dollars in prizes were given to the boys and girls at Murillo Fair. Boys under fourteen were to compete in milk stools; the girls under fourteen in pies. This Branch paid a visit to the Industrial Farm and invited the men to go also.

One Branch in Thunder Bay District has bought a piano and is paying for it by giving social evenings properly chaperoned which is also helping to solve the young people's social problem.

Three successful clinics were held in Port Arthur Hospital by the Murillo and McIntyre Branches. Five Branches in this district have been instrumental in having women trustees placed on the school boards.

Fort Frances Institute in East Rainy River held a clinic following Medical School Inspection, and eighty-one children were operated upon for the removal of adenoids and tonsils.

The district officers in Kenora purpose organizing many new Branches.

Western Ontario.

In *Centre Bruce,* the Bervie Branch has furnished a ward in the Kincardine Hospital. A box social and a play by a dramatic club realized them $90 and $59.80, respectively. Ripley Branch provided the school with wash basins and paper towels. They gave a donation of dishes to Kincardine Hospital and pneumonia jackets to Soldiers and Civil Re-establishment Department. Narva Branch had several demonstrations in bandaging by a graduate nurse. They exchanged visits with another Branch. A committee of three, select subjects for discussion at each meeting, such as home dressmaking, care of the stove, care of linen, when to buy and what to buy, etc. Kincardine Branch held a school fair comprising seven schools which was most successful. Reid's Corners gave assistance to the Kincardine Hospital, also liberal donations to the Byron Sanitarium and the Children's Memorial Hospital. They also presented their church with an indivdual Communion set.

In *North Middlesex* the Parkhill Branch reports that over one hundred families did their canning and preserving at the centre, in addition to canning for hospitals, etc. This branch placed a curtain in the town hall, and held a very successful clinic in September. *Komoka* Branch is providing the village school with individual drinking cups and is assisting very materially with the management of the Public Library. Coldstream Institute has contributed $135 to Lobo's Memorial Park. This Branch reports that they consider the demonstration lecture course in Home Nursing and First Aid one of the best things they have ever taken. Beechwood Branch is installing wash-basins in the school. This Branch held a bazaar when each member brought a piece of fancy work and some home made candy to sell. *Keyser* Branch donated a sum of money to the Sick Children's Hospital. *Lobo* Branch took charge of a booth at a School Fair and donated $15 in prizes. *Lucan* Institute held a very successful clinic at which twenty-six children were operated upon. They purpose buying a flag pole. *Ailsa Craig* Institute unveiled a tablet at the Public School in memory of four Public Schools pupils who fell in the war. A tree was planted to the memory of another and guards with their names are ready for six other trees. The school children assisted the Institute in this by collecting and selling papers from which they realized more than half the money required. This Institute donated curtains for the stage of the town hall. *Clandeboye* Institute has two schools installing the hot lunch.

In *Lambton* County, *Becher* Institute is trying to arouse interest in hot lunches and community life, also busy making money for the proposed Wallaceburg Hospital. *Blackwell* Institute is helping school by getting lawn swings. They have a splendid Junior Institute. *Collinville* Institute held a flower show. *Corunna, Maple Leaf* and *Providence* Branches are busy with Hospital work. *Wilkesport* Institute bought and is paying for a community hall. *Sombra* established a library and expect to place $100 worth of books in it each year. *Petrolea* established a Rest Room. *Union* Branch is raising and saving money for a Community Hall. A donation of fruit and table napkins was given to the Sarnia General Hospital. Each member is endeavouring to raise $2 for the Sarnia Y. W. C. A. *Providence* reports much value derived from the Home Nursing and First Aid course, forty-five members took advantage of the instruction given. *Lucasville* membership increased from twenty-five to forty-three as result of Home Nursing course. This Institute is interested both in Hospital and School Work.

In *West Kent* District, *Thames River* Branch remembers all "Shut ins" with flowers. Splendid donations have been given to the Salvation Army and Travellers' Aid. *Guild's* Branch donated a crate of fresh eggs to the Byron Sanitarium, clothing to the Children's Shelter and money to the Navy League. *Harwich Centre* Branch packed twenty Christmas boxes for patients at Byron in addition to contributing liberally to other chariable causes. *East Harwich* Institute arranges that some of its members will visit the schools monthly and treat the School Children to fruit and candy. *Dover* Branch paid for the cleaning and oiling of floors in four different schools in locality. *Forest* Branch has done splendid work for the cemetery, flower beds were made, and plots filled in, etc. *Arkona* Institute held a School Fair. This Institute also takes a great interest in the cemetery, and has converted it from a wilderness into a beautiful spot. *Alvinston* Branch gave a supper to the Masonic Lodge; sent magazines to the Byron Sanitarium and put on a play with home talent. Several gates and pillars were placed in the cemetry at a cost of over four hundred dollars. *Oberarder* Branch always holds its meetings in the evenings at the homes of the members, lunch is served and all enjoy a sociable time together. *Thedford* reports that their Rest Room has been of great value to the people. *Florence* Institute sometimes has cake contests for the girls, giving kitchen utensils as prizes. The cakes are served with the lunch, recipes given and published, Last winter "an old time concert" was held. Those taking part were of all ages, from wee tots of five to an old gentleman of over eighty. This encouraged a better community spirit and developed local talent.

The *Tara* Institute has done much to beautify the village by having the park ploughed and seeded and trees and shrubs planted. *Birr* Institute always serves lunch confining it to cake and sandwiches. They arrange it alphabetically, four ladies providing it each time. *Malden* Institute co-operated with the I.O.D.E., and raised $1,000 toward Essex Sanitarium. They supplied basins and sanitary towels to the schools, and gave a prize to child in each school who attends most regularly.

Essex Branch is raising money to help buy the town park. *Olinda* Branch is endeavouring to have a woman on the township Fair Board also in School Board. *Kingsville* Institute holds a contest each year to increase membership. *Leamington* Branch visits county House of refuge each Christmas giving treat to inmates. This year raising money to help secure Rest Room for ladies in town.

Underwood Institute gave pictures, basket ball outfits and croquet sets to four school sections. *Granton* Institute chose a flower, the dark red geranium, for their village flower, and are striving to encourage the beautification of neglected spots. The *Highgate* Branch donated $65 to the village library and assisted the Band Boys at their garden party when over $300 was raised. *Palmyra* Branch has raised considerable money, and in addition to giving liberal donations to charitable causes they have given contributions to the prize list of the local fair and donated the prizes for the sports at the annual Sunday School Picnic. They also had tables built for the picnic grounds at the lake.

Goderich Branch always has an interesting paper and a demonstration at every meeting. $100 was given to the building fund of the new hospital and $75 to the X-Ray fund of the Hospital. *Blyth* Branch is assisting with the new memorial hall which is being built. They purchased the building site for the Hall, and have paid the taxes on the same so far. They put on a play entitled "The Minister's Bride," from which they realized $170. The proceeds from a fowl supper were $250. *St. Augustine* Branch is putting wash basins and pitchers and towels in five schools. $100 was contributed to the X-Ray Department of Goderich Hospital. This Institute collected over $250 for a family with five small children who were burned out. *Londesboro* has saved $300 toward a community hall. They provided a nurse for two weeks for a man who was dying of cancer. They paid for the band music and awarded some prizes for a big community picnic.

Wiarton Institute is aiming at a memorial Hospital. The social side of their work last year embodied Chatauqua entertainments, local concerts, hockey matches and a birthday social. *Zurich* Institute reports that since listening to the addresses given by the summer delegate on Woman's Responsibility to Herself, Her Home, and Her Country, they have bought different books recommended along that line and are studying them at their monthly meetings. This Institute paid $25 to school trustees for basement improvements and gymnasium fixtures. *Oliphant* Institute states that their goal is to make their corner of the world better in every sense of the word, to uplift and make the most of themselves, physically, intellectually and spiritually and aim to help the children to be sane, honest and honourable citizens, working for their own and their country's weal. In this they receive hearty co-operation from the teachers.

In *East Elgin, South Yarmouth* only a few months ago has raised nearly enough money to equip and maintain a ward in the Memorial Hospital which is to be erected in St. Thomas. *Bayham* raised enough funds and erected a memorial Monument for the boys who fell in the great war. *Kingsmill* and *Mapleton* gave $75 to their three schools for games and are now improving the Mapleton Cemetery. They hold a Children's Day in their Institute and ask the children to give the programme for the Institute. *Lyon's* Branch raised money to build sidewalks for the village and provide games for the school. *Aylmer, Lakeview* and *Luton* are all raising money for charitable purposes.

In *East Middlesex, Belmont* Branch raised over $450 by serving meals at a Baseball tournament, a "Field Day," etc. *Hyde Park* in addition to contributing to charitable causes have contributed prize money for the School Fair for sewing, knitting, cooking and live stock. *Salem* Branch gave $50 to the church, to repair windows damaged by the wind storm; $10 worth of records were given to the Westminister Hospital, and $10 in special prizes for essays and drawings at the Dorchester School Fair. *Thorndale* exhibited fruit at the Western Fair and secured the first prize. *Hurondale* Branch in SOUTH HURON did splendid

relief work. Two children of a family in poor circumstances were completely outfitted with underwear, dresses, shoes, etc. so that they were able to attend school. *Crediton* has opened a rest room which is open to the public two nights a week. The travelling library is kept in this room. *Farquhar* Branch bought a piano which is used not only by the Institute members but by the whole community. This branch took shares in the Farquhar Public Hall.

Tiverton Institute raised $80 which was spent in improving the Reading Room of the Public Library. *Tara* Branch bought the equipment necessary for serving hot lunch in the rural school and find the children much benefitted by it. They are also raising funds for a Rest Room. *Exeter* Branch has the care and control of the Riverview Park. Trees have been planted, tables and seats provided and the ground levelled. They purpose securing a Rest Room in the town for the ladies. The Dominion Chatauqua put on a four day entertainment under the auspices of the institute.

Thamesville Branch in co-operation with the Botany and Town line Branches has opened a splendid Rest Room in Thamesville. It is open from 9 a.m. until 10 p.m. and a janitor is employed to look after it.

Mount Brydges donated a large sum of money to the Library for the purchase of books. *Strathroy* branch furnished a room in the town Hospital when it was opened and have maintained it ever since. They have donated blankets, sheets, pillow cases, curtains, fruit, etc. *Appin* Branch has donated money to help improve the driveway to the cemetery. *Walkerton* is erecting a memorial drinking fountain in the town costing about $200. *Lucknow* has helped a soldier who had returned blinded. They also raised over $100 to help care for the wife of a soldier dying with cancer. They appoint a school committee which visits the school and reports any urgently needed improvements, then they hold a concert and raise the necessary funds for purchasing them. *Belmore* Institute has purchased community song books and have introduced community singing.

Central Ontario.

DUFFERIN County has 21 Branches, which are all doing very good work. Some are looking after hospitals and some are putting down cement sidewalks; others are looking after cemeteries while *Shelburne* is working for a Rest Room. Two sessions are always held at the District Annual meeting, the morning session is devoted to reports, election of officers, the afternoon to addresses and discussion.

CENTRE GREY has been working for memorials in different forms. *Eugenia* is raising a large amount for a monument to be erected in the Hydro-Electric Park. *Ceylon* is building a community church. Another Branch is building a community hall. *Vandeleur* Branch is furnishing a ward in the Owen Sound Hospital, and they are keeping it provided with linen. *Flesherton* has a memorial park in view. Other Branches are interested in beautifying the cemeteries.

The three districts in GREY County hold an Annual Convention in August. The afternoon is devoted to reports and discussions, the evening session to addresses. As a County they are supporting the Children's Shelter, $722 being raised last year.

HALDIMAND County has 23 Branches. In the lower part of the county all Branches are helping with the Haldimand Memorial Hospital. Other branches are raising money for soldiers' memorials. Many Branches are co-operating with the Farmers'Clubs. At the request of the Agricultural Fair Committee the Caledonia Branch took over the dining hall on the Caledonia Fair Grounds. A number

of Branches have been the means of having the hot lunch introduced into the schools. One Branch which was unable to have an equipment placed in the school, supplied three schools, with an average of 60 pupils a day, with hot cocoa at the noon hour. At the District Annual meeting, the Public School Inspector is always asked to come and present to the women the needs of the schools. This year the Public School Inspector invited the District President of the Institutes to speak at the Teacher's Convention.

HALDIMAND has a county programme and in the month of January all Branches have an evening meeting to which they invite the men and the subject for debate is Consolidated Schools. Haldimand is interested in securing School Nurses. They are also assisting with the support of the Children's Shelter.

Bowmanville Branch in Durham County is doing much for the hospital. *Nestleton* has undertaken to provide for a widow with three or four children. *Orono* is interested in the Hot School Lunch, and having women placed upon the School Board. Other Branches in this county are interested in community parks and cemetery improvement.

Galt in Waterloo county had a rally for new members and now have 263. *Paisley* members put on exhibits at the Agricultural Fair, the prize money going to the Institute. Many Branches in this county have contributed to the Freeport Sanitarium for Consumptive Soldiers and to the Children's Shelter in Hespeler. *Hespeler* has been improving the town park. *Central Dumfries* raised over $300 for the Galt Hospital. *Ayr* is working for a Soldiers' Memorial and for the improvement of this park. They have raised over $1,500 through the collection and sale of waste paper. The papers, magazines and books are tied in separate parcels because they are graded.

Two branches in *North Oxford* have been instrumental in placing a woman upon the School Board. Another Branch has appointed a School Committee which co-operates with the Trustee Board and has accomplished much in the way of having the school cleaned and redecorated. Another Branch has been raising funds to have a new floor put in the school. One Branch has raised considerable money by putting on a "Trip Around the World" by amateur players.

PEEL County has 16 Branches. *Malton* has had community singing and a series of educational concerts and two child welfare clinics. *Belfountaine* purposes turning an unused church into a Community Centre. *Sandhill* has helped three schools with the equipment for the hot lunch. *Streetsville* has put paper towels and soap into the local schools. The Institutes of Peel support a Rural School Nurse. They also held a Girl's Summer Camp on the Lake Shore where the boys have had a Y.M.C.A. Camp for three years. Much assistance was given by the Y.W.C.A. The Camp was in charge of a girl who is much interested in Children's work and is a splendid leader.

Trafalgar Branch in Halton County has placed sanitary water containers in all schools in their locality. A reading competition was started among all schools in the neighborhood and a public test was held in the township hall.

Esquesing Branch donated a shield to the Rural School Fair to be the property of the school, winning for three years in succession the greatest number of Branches. *Omagh* Branch has donated two furnished cots to the Children's Shelter.

Blue Lake Branch in *NORTH BRANT* has contributed generously for needy purposes.

Englehart gave $100 to the Haileybury Shelter for Homeless Children.

Glen Allen Branch has undertaken to classify the books in the Public Library. They are also agitating for repairs to sidewalks.

Hillsburg Branch is co-operating with the young people in building a skating rink. They are endeavouring to establish a Free Library for the District and to beautify the cemetery.

Port Dover Branch planted a memorial Avenue of elm trees. At each end cobblestone pillars are erected and in the centre a monument. This Branch has also entertained the public school children.

Coningsby gave prizes to the Horticultural Society, and bought vegetable and flower seeds for the school children for home gardens. This Branch holds a Girls' Day and a Mothers' Day during the year. They also believe in exchanging visits with neighboring Branches. As this Branch is purely rural, it very often holds its meetings in the evenings at the homes of members when old and young can come together.

Whitby Branch in South Ontario is working to purchase a piano for their meetings. The December meeting is always held at the House of Refuge when a Christmas tree and programme is given to the old people, after which tea is provided for them by the Institute.

Pickering Branch is busy raising funds to buy a Community Hall.

Brooklin Branch imposes a fine on any member not answering Roll Call. They have placed a traffic post at a dangerous corner. First, second and third prizes were offered at the School Fair for choral singing.

Whitevale Institute gives a prize for the best kept lawn and garden in the community. This Branch is co-operating with the U.F.O. Club in rebuilding a Hall to be used for a Community Hall.

Shirley Branch cleaned and decorated the Public School. The Institute members did the cleaning and then they engaged a decorator.

Claremont Branch always has the July meeting taken by the girls. The programme consisting of vocal and instrumental music, drills and a debate.

Mount Albert Branch raises some money by serving lunch at the Rink at the close of Hockey Matches. They purchased a piano for community use. A special feature of this programme for the annual meeting which is very helpful is a "Criticism of the Year's Work."

Delhi Branch is raising funds to build a memorial hall. Last winter they rented a building, put in stoves, tables and chairs and held weekly teas. Ten or fifteen ladies would serve at each tea and provide all refreshments. Over $325 were raised in this way. This branch arranges and finances entirely the school fair.

Haliburton Branch received a petition from the young men in the town asking them to co-operate with them in building a memorial on a plot which they had provided for the purpose. Over $1,300 has been raised for the same.

Mount Elgin Branch has placed three immigrants in good homes. This Branch is undertaking the lighting of the village streets.

Blackwell Institute has had two lawn swings made to order for their school at a cost of $25. The Junior Institute arranged for basketball and football games during the summer evenings.

Union Branch, Lincoln County, held two contests, one in candy making and one in salad making. $40 was donated to the St. Catharines Y.W.C.A. and $25 for prizes at the School Fair.

Queenston Branch aims to improve the Public School grounds by having it graded and seeded down, and in one corner a tennis court which would be easily flooded for a rink in the winter.

Port Dalhousie Branch which has been organized only a year has had the schools around them medically inspected and a two day clinic held.

Louth Branch raised money to wire and instal fixtures in the public hall. Two ladies were appointed to act as an advisory committee for school boards in two sections and in the other section a lady trustee was appointed.

Caistorville donated money to the Light Board to help in erecting lights to light the village and to the Library Board for the purchasing of new books.

Abingdon appoints a committee of two each month to visit the different schools and report on the needs of each.

Grimsby Branch leased a flat in the town to be used as a rest room. It contains a kitchen, dining room and large reception or work room. Cupboards were built, chairs and coal oil stove bought. The Institute meets once a week to sew for orders which they have received.

Niagara-on-the-Lake is raising funds to furnish the laundry at the local Cottage Hospital.

Chippawa Branch pieced and quilted two quilts for the Children's Shelter and two for a member who had the misfortune to lose her house and contents through fire.

Beatrice Institute in *CENTRE MUSKOKA* since organizing about a year ago has built up a good library and placed seats in their picnic grove.

Utterson is busy with their memorial Park. They also have a good library of over 100 books.

Port Sydney is building a Community Hall.

Raymond is raising money to furnish a community Hall which is to be built in the near future.

Beaverton Branch in Ontario County is providing clothing for a soldier's family, of eight children. $115 was raised by a Calico Ball held in the Town Hall, and with this money an equipment for the Science Room of the Continuation School was purchased and presented in recognition of services rendered by 31 ex-pupils who enlisted from the school. This Branch has a press secretary whose duty it is to send notices of meetings to the local paper.

Warsaw Branch has started a choral class conducted by a good choir master.

PRINCE EDWARD COUNTY raised $188 as a special work for the new wing of the Prince Edward Co. Hospital; besides each Branch did its own Local Community Work such as buying a piano, improving cemeteries and relieving distress in some poor families.

Aspdin Branch in *NORTH MUSKOKA* is planning to give a prize to the most regular attendant at three different schools.

Birkendale and *Dwight* are interested in a Municipal Hospital. They also contribute to the Institute Rest Room at Huntsville.

Dorset has cleaned up the town.

Silverdale Institute has bought a hall, repaired it and equipped it with organ, library, dishes, table linen, etc.

REPORTED AT ANNUAL CONVENTIONS, 1921.

Eastern Ontario.

Conway Institute has built up a library of three hundred and fifty volumes. Part of the money was raised by socials, part by individual subscriptions and some people contributed books from their private libraries. The books are kept in a member's home, and she acts as librarian without remuneration. *Morewood* has also opened a library. Several others have contributed to those already established in the locality.

Carleton Place had a course in Home Nursing, the instructors all being nurses or ex-nurses belonging to the town. Any one could take the course by paying a fee of one dollar, twenty-five cents covering membership in the Institute, twenty-five for supplies required for the course, and fifty cents for a book on Home Nursing. The training was found most valuable when the influenza epidemic struck the town.

Clayton sent donations of butter, eggs, vegetables, fruit, jellies, maple syrup and linen to the county military hospital. They have made two quilts for the House of Industry and have two more ready to quilt, in addition to which they have given contributions to the Chinese Famine Fund, the Navy League and the community recreation grounds. They have an annual supper to which the men are invited.

Elphin has made a specialty of work for their two nearest schools. Each month they appoint two members to visit the schools and bring back reports to the Intitute. Last winter two of the members loaned a tea-kettle and a dish-pan to one of the schools, each pupil brought its cup and spoon and they had cocoa with their lunch at school. The plan worked so well that the Institute has decided to provide both schools with dishes, kettles and spoons this winter.

White Lake branch put drinking fountains in their school, voted ten dollars to the public library and five to the Referendum cause. They had a chicken supper to raise money to have the cemetery cared for, and on New Year's Eve they packed twenty boxes and took them around to all the aged and shut-in in the community.

In the way of creating good times for the neighbourhood, developing local talent and extending the work many interesting plans were unfolded. There was a healthful sign of progress in the report that where Carleton district had had eleven branches two years ago, there are now eighteen, each organized evidently as a result of seeing the benefit of the others. This district holds its annual meeting at the Experimental Farm on the annual County Field Day, and the Women's Institutes, the Board of Agriculture and the Beekeepers' Association have dinner together. A number of Institutes have found amateur plays a good means of developing local talent. *Finch, Sydenham, Berwick,* and some of the girl's institutes have been particularly active in this. *Bonnechere* has specialized in community singing.

Carr gets the local doctors, clergymen and school teachers to give addresses at their meetings. *Athens* has an annual "Old Ladies' Day." At the last one they had an address on the pioneers and presented each old lady with flowers. The same institute had a photo contest, getting all the people to bring baby pictures of themselves and guessing to whom the pictures belong. They have also had a contest in which the men were included at dressing a clothes pin for a doll. *Perth* is having

a formal banquet with all the toasts, addresses and usual banquet procedure. One Institute is studying the book "Resources of Canada," by distributing the questions and answers among the members, appointing a teacher and taking them up like a lesson in school.

Maynard is taking care of their cemetery, having the plot owners pay two dollars a year toward the wages of a man to look after the whole cemetery through the summer months.

The Institutes of *South Leeds, Delta, Mallorytown, South Augusta, Morton* and *Algonquin* have established a Rest Room at Brockville.

Girls' Institutes.

One of the outstanding features of the Eastern convention is the report of the "Janey Canuck" Girls' Institute of *Almonte.* There are other girls in the district, especially at *Lansdowne* and *Delta,* doing equally interesting work.

The "Janey Canuck" Girls are co-operating closely with the Junior Farmers. They have organized a literary society together and they put on amateur plays, Together they have taken over and fitted up an old hall for a community centre. The girls have a basket-ball team and the boys play football. When the boys have a game at *Almonte,* the girls provide supper for the visiting team, and on occasions when the boys are playing away from home they arrange an automobile excursion and take the girls with them. As a lot of young people are away from the neighbourhood attending High School or College they have an "At Home Dance" during the Christmas holidays. They do not patronize the town rink, because they have a lake of their own, and they build their own driftwood fires and have their own skating parties all winter. Their gatherings are all properly chaperoned and close at a respectably early hour.

This Girls' Institute is furinshing a private room in the hospital at Almonte. They have a "cent a week" fund for a hospital in Ottawa. They co-operate with the Women's Institute in putting on a concert every winter, and they have done some fairly heavy study work at their regular meetings. And they are all busy farm girls, five of them having the full responsibility of the housekeeping in their homes.

The *Delta* Girls' Institute has flourished so that their membership has grown too large for them to be conveniently entertained in each others' homes so they are fitting up a club room. They find their meetings so interesting that they hold them every two weeks instead of once a month, and their addresses and discussions are evidently of a very high order. The young lady who reported their work said, "It was Ruskin, I think, who says, 'The reverence for the law should be breathed by every mother to the child who prattles at her knee,' and we have completed a study of the laws of Ontario." By holding a sale at the time of the town fair they raised enough money to send donations to the Navy League, the Sick Children's Hospital, the Muskoka Free Hospital for Consumptives, and the Chinese Famine Fund. They also helped the Women's Institute of Delta to raise money to send a crippled boy to business college.

The *Lansdowne* girls are working towards a library and rest room. They are giving donations of money to two neighbouring cemeteries, have named a cot in a Children's Hospital and given prizes at the local fair. Their most interesting piece of community work was last Christmas Eve, to pack two boxes of stockings, underwear, candy and fruit for the children of two poor families, with a ten dollar

bill on the top of each box for the mother, and to pay the taxes of an old lady in their village. "We hope to pay her taxes as long as she is with us," the girl reported. These girls are also studying the laws of Ontario.

Western Ontario.

It was particularly noticeable in reports from Western Ontario that the institutes are turning their attention to the needs of their own communities rather than to raising money for outside causes. The exception to this, of course, is hospitals and county institutions. The institutes of Western Ontario have contributed $2,274 to the Children's Hospital at London, $1,000 of this coming from East Lambton.

Coldstream is contributing to the hospital, the local library, rest room, park and the navy league.

Mapleton and *Kingsmill* are working for medical inspection and hot lunches in the school.

Blenheim has held a baby clinic.

Harwich has organized a library starting with 35 of the best books they could get.

Lobo gave $70 to a family who had lost their home through fire.

Watford is sending contributions to the Institute for the Blind.

Ridgetown has rented a room over a store and fitted it up for a rest room for women coming into the town from the country.

The *West Kent* institutes are concentrating on their Children's Shelter. Some of them are endeavoring to beautify the homes of the district by distributing flower seeds to the school children in the Spring and holding a flower show in the Fall.

Chesley institute has held sewing bees to make clothes for a family of four children who had lost their mother.

The *Chatham* institute and Thames River have each presented their schools with gramophones. They believe that this is one of the best ways in which they can help the children acquire an appreciation of good music.

The *Blackwell* institute has furnished its school with swings and other playground equipment.

Some of the institutes are doing special work for the girls of their communities. At *Lucasville* they have organized a girls' athletic society with provision for tennis, basketball and general gymnasium work. They found a woman in their own neighborhood who had a special training along this line, so they do not require outside leadership. The *Delaware* institute in arranging for its demonstration lecture course in home nursing, had it put on in summer holidays when their girls were at home from high school. A girls' institute was organized at the close of a demonstration lecture course at *Paisley,* and the girls are co-operating with both the women's institute and the junior farmers. *Kentbridge* girls' club is helping the institute to provide for a girl from the neighborhood in a Muskoka sanitarium.

It is noticeable, too, that many of the institutes are working with other organizations in some enterprises of interest to both. Some of the branches around Sarnia are interested in the Y.W.C.A. of the city because it may be of help to their daughters when they go into town to school or to work. *Lucan* has bought a piano for the G.W.V.A. club rooms *South Harwich* is co-operating with the I.O.D.E. in establishing a rest room. At *Zurich* the institute and the W.C.T.U.

have gone together in fitting up a room for their meetings. *Blackwell* is working with their local U.F.O. in building a community hall. And *Granton* gave a glowing account of the advantage it has been to them to have a men's committee in connection with their institute. When they decided to set up a soldiers' memorial for the district the men were called into consultation and took them in their cars to visit other memorials to see what would be best suited to their own locality. The men further supported them when they took the matter before the township council to ask for assistance.

Central Ontario.

In addition to the general programme for school improvement, establishing libraries and rest-rooms, building community halls, and supporting local hospitals, children's shelters and old people's homes, there were certain individual features of special interest.

Stoney Creek is educating an Indian girl in medicine.

Meaford and *Mt. Albert,* in addition to building up their libraries, have arranged a "Story Hour" for the children. *Mt. Albert* supplements its regular library by bringing in a circulating library which is changed every six months.

Rockville in North Grey, organized and is keeping up a Sunday School in a settlement where it was needed.

Glanford institute, with the help of the girls and the Junior Farmers' Association has bought fifteen acres of land and is fitting it up for a community playground.

The *Upper Hamilton* women are providing clothes for the children of the unemployed so that they may attend school.

An interesting report came from the *Oshweken Indian Reserve.* Mrs. Hill, a native of the Reserve and wife of an Indian soldier, quite captivated the audience by her charm of voice and manner and her clear, beautiful way of expressing herself. Evidently they have good schools on the reserve. Mrs. Hill told how the Department had sent Mrs. Ross, then Miss Sutherland, to a meeting of their U.F.O. last winter, and they had organized a women's institute. Since that time they have had a nurse address them on "Colds, and how to prevent them"; and the wife of the local doctor spoke at one meeting on "Sanitation in the home." At another time Dr. Mary Rutnam gave them an address on "Telling the Story of life to children," "which," the speaker said, "we have found very helpful." They have had medical inspection in their schools and they want a demonstration lecture course in home nursing. It was plain that the women of Oshweken are doing some thinking for themselves when, at a later session, their delegate brought in a resolution for the enfranchisement of Indian women. So far, the men on the reserves, except those who were in the army, are not enfranchised, so for the present the petition would have to be limited to the wives of soldiers.

Work Reported at the North Bay Convention.

Some idea of the work being done by the members of the Women's institutes to improve conditions in the communities in which they live may be glimpsed from the reports presented to the convention by the delegates from the branches. Many of these latter are situated back from the railway lines, one reported a membership of eight and an average attendance of six, and tales were told of women in rural districts who travelled as far as twelve miles to attend meetings.

The efforts made by the institutes ranged all the way from the installation of a bell on the school and the giving of a Turkey Supper to Boy Scouts to the provision of an ambulance and the clearing up of burying grounds. The urgent need of community nursing in the country sections and of medical inspection of schools was emphasized. At *Richard's Landing,* on Manitoulin Island, the institute is trying to secure the former in the face of the opposition of the municipal council. The question will be carried to the people.

At *Englehart* the members meet in the homes of members, going the rounds in alphabetical order, and there are social gatherings held for the raising of funds. Much work was done during the war, and the annual receipts are on an average, $500 and over, with expenditures of $485. The Institute there took charge of two motherless babies, helped a sick man to the hospital at Cochrane, co-operated with the Agricultural Society and held a School Children's Fair that was "second to none in the North Country." Elmsdale erected a monument to the soldiers who fell overseas, and put in most of last year clearing up the cemetery.

At *Cochrane* a public park was cleared and stumped and a cinder path put through the grounds. A School Fair was held, relief work among the needy in town and the settlers in the vicinity was undertaken and much work done for the hospital there. Most of the furnishings in that institution were provided by the Institute and a new ambulance was donated. *Burks' Falls* chief work was the raising of $250 towards a skating rink and opening of a long needed rest room, the schools had been improved and a Girls' Institute was contemplated. Tag days for the Queen Mary Hospital and the Children's Aid Society were held. *South River* made quilts for both institutions.

From the four branches on St. Joseph's Island came reports of community nursing at *Richard's Landing,* where it is hoped to push the idea despite the reluctance of the council, from *Cartertown* of annual bees for the improvement of the cemetery, knitting for the Children's Shelter at the Soo and the donation of an organ to the school. *Hilton* had opened up the library and was now paying for stage scenery bought in the Soo, and *Kentvale* had demonstrations in butter making, a Girl's day, and was providing cupboards for the neighbouring schools in which to place the domestic science equipment. *Espanola* made plans to provide supplies for the hospital, had secured a playground which it hoped to supervise, had held a School Fair and had given the Boy Scouts a Turkey Supper.

Feronia bought a bell for the school, provided a garden for thee same place, did war work, gave shoes to needy children, and is now trying to raise funds for a community hall or public building. At *Loring* medical inspection of schools had been arranged and they were now trying to secure a community nurse, "a real need" in that district.

Donations to the hospital at Cochrane and to the Queen Mary hospital, the improving of the cemetry grounds, the Children's Fair, and the provision of a cot and mattress for the ambulance were some of the activities of the *Mathewson Institute* in the Soo district; one of the six branches there had erected a memorial to its soldiers and had built a telephone line, while another had, by vigorous canvass, increased its membership from fifty to one hundred and three. Another had aided victims of fires and sought to obtain music lessons for the neighbourhood.

At *Ice Lake,* on Manitoulin Island, the branch of ten members is composed almost entirely of young girls, who conducted business. In *West Manitoulin* there are six branches, with ninety-six members. In *Gore Bay* a rest room has been provided for the comfort of the women and children, some of whom drive forty-

eight miles to their nearest town, and they can take meals at this place. To meet the expenses in this connection the branches were at first taxed five dollars each, and each member sixty cents per year, but this was changed and now donations, ranging from $5 to $12 per year, are taken. There are funds on hand to last another year.

There are funds on hand to last another year.

Swastika reported that most of the work done had been in connection with the school, and for the comfort of the teacher and children, and at *Sprucedale,* quilts were made and a tag day for the Children's Aid held. *Uno Park,* since the war, has devoted itself to local conditions, largely with the school. *Little Current* reported that $150 had been raised toward a war memorial, and efforts toward the improvement of the schools. *Tekhunmah,* on Manitoulin, did quilting. Some of the members of the last named travelled eight miles and back to the meetings and the women probably had to walk that distance. Other branches reported similar work.

The secretary of the *Monteith* branch reports: "As the settlers in our district increased in numbers, there arose the question of getting a hall built, where the crowds could be accommodated for entertainments. The institute also needed such a place to hold its meetings. Three trustees were appointed, a corner of the public school grounds leased, and a hall erected with funds raised by the Women's Institute. It has proved its worth in many ways. It is now being used as a day school in connection with the Northern Academy, and on Sunday it is used as a Sunday school by the Union Church, as well as for church services and evening meetings of all kinds. It is equipped with a kitchen, is electric lighted, and last year we put in a phonograph."

Work Reported at the Fort William Convention.

All the institutes in this section seem to be interested in public health, better schools, school fairs and community life.

Fork Institute has painted the school, supplied new blackboards, hardwood flooring and First Aid equipment. They are doing good work socially among the young people.

La Valle donated $100 toward their community hall. They are interesting the girls of the neighbourhood in the institute and "Canadian Girls in Training" work.

McIrvine just one year organized, has bought a piano for their community hall.

Fort Frances has had the demonstration-lecture course in sewing. This institute contributed $20 toward prizes for the School Fair.

Pinewood gave assistance to a young widow who was left with small children to provide for.

Stratton held a school clinic at which seventeen children were given medical treatment. They sent an order for goods to the Institute for the Blind at Toronto, helped to organize a brass band in the town, and donated prizes to the School Fair. By serving meals on their picnic grounds on Dominion Day, they raised $170 for their institute funds.

Chapple, with a membership of only fifteen, gave $20 and two special prizes to the School Fair.

Shenston has as its object this year the building of a Community Hall. They completed the erection of their church sheds, and will erect a fence around the church-yard.

Barwick held a successful school clinic last November. They also took charge of the School Fair for the municipality of Chapple.

The Beaver Institute held a clinic at which forty-five children and four adults were successfully treated. Planning to cater for a banquet, and not having enough dishes, they held a card party to which the necessary admission was a cup and saucer or a plate. They are saving money towards establishing a hospital or helping to establish one. They had a series of lectures through their county Department of Agriculture last year, and a course in Dressmaking from the Institutes Branch. They have assisted one of their own members, as well as a family in the neighborhood, who had suffered losses from fire; helped the baseball club in buying new uniforms, built a safety platform in the bathing stretch along the river for the protection of children, and provided a dressing room for the girls. They are also planning special features to maintain their girls' interest in the institute. They cater to the U. F. O. picnic and assist in billetting the delegates to the Teachers' Convention, and they have over $600 in hand toward their hospital.

Emo has erected a memorial tablet to their fallen soldiers, and have assisted with the summer camps for boys and girls in the community.

Devlin has assisted the library, put drinking fountains in the school, erected a monument to the fallen soldiers, helped with the community hall and summer camps for boys and girls.

Burriss has planted trees around the cemetery, and beautified the community in many ways. This institute has put an organ in the school, supplied playground equipment, built shelter sheds and helped sufferers from fire.

Barnhart has given liberal donations to their Fall Fair.

Hornepayne branch, whose school was overcrowded, secured a railway coach to be used as a temporary school. They have also assisted the school by purchasing window shades and dishes, baseball and basketball equipment, and prizes for sports contests on Victoria Day. They have spent over $900 on school betterment. They have a woman on the School Board.

O'Connors Institute conducts a fall fair entirely on its own responsibility, and the event is patronized widely by both city and country people. It is one of the best fall fairs in the district.

South Gillies has done much toward providing the township with a community hall.

Cloud Bay Institute is a remote settlement and is working to secure the services of a public health nurse, and better roads.

South Neebing is a small branch with a fine spirit and splendid programmes. At each meeting they try to have every member demonstrate something for the good of the home.

Fort William branch is interested in a Rest Room for women coming to the city from the surrounding districts, also in the Wesley Institute where settlement work is done. They have held clinics for children from the surrounding districts, assisted with the West Algoma Fair.

PRESENTATION TO MRS. TODD, RETIRING PRESIDENT.

Mrs. Todd retiring from the office of provincial president this year was presented with a handsome leather attache case and hand bag, in appreciation of her devoted service for the past three years.

Mrs. Geo. Edwards, of Komoka, on being introduced as the new president made a delightful little address, touching particularly on the service the women "in the afternoon of their lives" could give their communities through their institute work. "People should do their best work after three-score years," she said, and referred to Tennyson's poem, "Crossing the Bar," written in his eighty-first year, and Julia Ward Howe's "Battle Hymn of the Republic," written in her seventy-first year. Mrs. Edwards has already made a warm place in the affections of many institute members and promises to have hearty support through her term of office.

Ontario Department of Agriculture

SIXTEENTH ANNUAL REPORT

OF THE

Horticultural Societies

FOR THE YEAR

1921

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO
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1922

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THE RYERSON PRESS

To His Honour HENRY COCKSHUTT, ESQ.

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Report of the Horticultural Societies of Ontario for the year 1921.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1922.

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ANNUAL REPORT

OF

The Horticultural Societies of Ontario

1921

To the Honourable MANNING W. DOHERTY, *Minister of Agriculture.*

Sir,—The sixteenth Annual Report of the Horticultural Societies of Ontario is herewith transmitted, together with the proceedings at the Annual Convention of the Ontario Horticultural Association, and the Financial Statements of the Societies showing their Legislative Grants.

Twenty-five Societies were organized in 1921 and the total membership is now about 32,000, and will be largely increased this year, as we already have many applications for organization, particularly from rural municipalities, that are being imbued with the spirit of improvement of farm and home surroundings. Our last Convention was the largest yet held by this Association.

Faithfully yours,

J. LOCKIE WILSON,

Superintendent.

OFFICERS AND DIRECTORS, 1922.

President ..... Rev. W. M. MacKay, Weston.
First Vice-President, ... J. P. Jaffray, Galt.
Second Vice-President, ... J. E. Carter, Guelph.
Secretary and Editor, ... J. Lockie Wilson, Toronto.
Treasurer, ... C. A. Hesson, St. Catharines.

Directors:—District No. 1, Geo. M. Simpson, Ottawa; District No. 2, H. A. Middleton, Lindsay; District No. 3, W. P. Bailey, Fort William; District No. 4, T. D. Dockray, Toronto; District No. 5, Rev. G. W. Tebbs, Burlington; District No. 6, Wm. Hartry, Seaforth; District No. 7, J. A. Hallman, Kitchener; District No. 8, Dr. F. E. Bennett, St. Thomas; District No. 9, J. E. Brown, Kingsville.
Auditors: W. J. Evans, and L. Godson, Toronto.
Representative to Canadian National Exhibition: Wm. Fountain.
Representatives to Royal Agricultural Winter Fair: W. J. Evans, J. M. Pearen, and T. D. Dockray.
Representative to American Civic Association: J. Lockie Wilson.

TREASURER'S REPORT

Financial Statement, February 9th, 1921, to February 7th, 1922.

RECEIPTS.

Balance on hand as per statement of February 9th, 1921	$ 488 87
Affiliation fees, arrears	5 00
Affiliation fees, account year, 1920-21	73 00
Affiliation fees account year, 1921-22	169 57
Bank interest to November 30th, 1921	8 90
Total receipts	$745 34

EXPENDITURES.

Stationery, $2.29; Treasurer's account, postage, $2.78	$ 5 07
Honorarium to Secretary, $100; Honorarium to Treasurer, $25	125 00
Assistants at Convention, $35; Complimentary tickets to banquet, $10	45 00
Affiliation fees, account year, 1920-21	73 00
H. G. Dillemuth, plants at Convention	10 00
Miss Halter, stenographer, re President's letter	3 57
J. G. Jack, Jamaica Plain, Mass., lecture expenses and exchange	28 75
W. R. Phillips account for printing	28 56
T. Eaton Co., account, trophy for American Gladiolus Show	27 65
Delegates expenses to American Civic Association, Convention	50 00
Expenses account display at Canadian National Exhibition	60 15
Legislature restaurant, meals at meeting of Board	4 00
Bank charges on affiliation fee cheques	4 50
Total expenditure	$ 403 35
Balance on hand	341 99
	$ 745 34

St. Catharines, February 7th, 1922.

C. A. Hesson,
Treasurer.

ONTARIO HORTICULTURAL ASSOCIATION

ANNUAL CONVENTION.

The Sixteenth Annual Convention of the Ontario Horticultural Association was held in the King Edward Hotel, Toronto, on Thursday and Friday, February 9th and 10th, 1922. All the delegates were imbued with the idea of a "More beautiful Ontario." Representatives were present from points as far west as Fort William.

PRESIDENT'S ADDRESS.

Miss Mary Yates, Port Credit.

Our affairs for the past year, and those confronting your Board of Directors at the present time, will form the major part of my address to the delegates this morning. Deep and enthusiastic interest, in what Wordsworth called, "Patches of household land," gives me confidence to ask the Societies to consider at this time some principles of co-operation by means of which the affairs of amateur gardeners may be further developed.

Growth should imply proper functioning of the parts of any organization. Connection of these parts with a strong central executive is essential, an executive that is both able and willing to put into effect the policies desired by the majority of the units, for the benefit of the whole. These policies should be defined by the resolutions moved and carried in Convention by the delegates themselves, and they should be most carefully framed for the guidance of the committees appointed to make them effective.

The field of our affairs will be considered in two parts, viz: The transactions arising from the resolutions passed by the 1920 Convention and the transactions awaiting action by your incoming board of directors. These will be governed by the resolutions carried by this Convention.

Transactions Arising from 1920 Resolutions:

1. Application for increased grant from the Ontario Department of Agriculture was made in March, 1921.

I wrote to the Societies asking them to interest their members of the Provincial Legislature, by means of the strongest possible local committees, bringing the importance of securing this grant directly to his notice.

I asked to be advised immediately the societies had taken local action, as the executive would thereby be strengthened, in laying the matter before the Premier and the Minister of Agriculture. Eighteen M.P.P's. expressed themselves favourably, and of these, four were Cabinet Ministers.

Our application was refused. It would have been better for our cause if the Societies had all taken the matter up actively as they were requested to do. The Minister of Agriculture expressed great pleasure in the progress made by Horticultural Societies, and considered that local authorities and individuals are well justified in supplementing the efforts of the Government on our behalf.

2. A display was made by the Association at the Canadian National Exhibition, and a detailed report of this work is laid upon the table. I wrote to all the Societies, twenty-two of them responded by taking an active part, and these merit the greatest admiration for the manner in which the fine quality of bloom was packed and shipped. A large quantity of flowers were delivered at the Exhibition. Of outstanding merit were—(*a*) The fifteen large bowls of sweet peas sent from Fort William, stems from fifteen to eighteen inches long, four and five florets to a spike. (*b*) Fine collections of gladioli from the trial grounds of the St. Thomas Horticultural Society and from Old Oaks, the farm of J. R. Wilson, Clarkson. (*c*) A basket of remarkable crimson, seedling currants grown and shown by Mr. J. R. Berney, member of the Owen Sound Society. These attracted a great deal of attention by reason of their size, color and long bearing season. (*d*) The two motor truck loads of bloom from the Markham Society, which were delivered at the grounds and staged by one of their prominent members, Mr. Harry Rolph.

The displays at the C.N.E. have been in the nature of an experiment only. Continuance of them should be carefully considered. Opinion is divided, and the question of a Provincial Show of hardy flowers by the Ontario Horticultural Association will be laid before you. Our work at the C.N.E. should be regarded as paving the way for other efforts of a more important character.

3. As one of your representatives to the Royal Agricultural Winter Fair, I attended the Meetings of the Horticultural Section of this Board. The show was eventually postponed, as you are aware, but amateur gardeners had prepared to do their part in connection with it.

I may remind you that the Show was scheduled to take place in the winter at a time when the majority of amateurs have no flowers, but in order to show cordial interest in the work of our friends, the Commercial and Professional Gardeners, I succeeded in obtaining two valuable trophies for them. These were promised by the Toronto Horticultural Society and by the Ontario Rose Society and were to be offered in the class for Chrysanthemums occupying 300 sq. ft., and for the best vase of fifty roses, respectively. I have reason to believe the effort made to get these trophies given by amateurs was appreciated.

4. The Nursery Control Act. Based upon your resolution, some action was taken to draft the clauses of a bill, about which I received certain correspondence and which seems to be in abeyance at present.

5. Co-operation with kindred organizations for educational work was felt to be highly desirable. In order to provide some opportunity for the discussion of policies interesting to all gardeners, your Board has invited delegates from kindred organizations named in the resolution, all of whom welcomed this effort at co-operation. It is hoped that the viewpoint of these organizations will be presented during Convention and that a resolution may be forthcoming that will result in the appointment of a strong committee able to confer upon progressive policies, especially in regard to Horticultural Annual Shows, that may be held in the different provinces of Canada, and also in regard to the Federal Registration of Plants. If a Canadian Council of Horticulture can emerge eventually, amateur gardeners will be glad to co-operate with the other groups.

6. The trophy for amateur competition at the Gladiolus show held in St. Thomas, a silver candelabra, was won by Mr. R. F. Cameron, St. Catharines, with his entry of ten varieties of five spikes each.

7. The Extension Service of the Provincial University reports a great willingness to be of service to us. Correspondence may be addressed to Mr. Dunlop, Extension Service, University of Toronto, for particulars regarding the help his Department is prepared to furnish.

TRANSACTIONS AWAITING ACTION BY THE INCOMING BOARD OF DIRECTORS: In addition to the subjects dealing with technical matters, and civic responsibilities, there are four outstanding affairs requiring consideration:

(*a*) **The desirability of a Provincial Show.**

(*b*) The Finances of the Association.

(*c*) Education in Gardening, involving the proposed Council of Horticulture.

(*d*) The Relationship of the Amateur with Commercial Organizations.

These affairs involved our policies for the future and should be carefully debated.

REV. W. M. MACKAY, WESTON. PRESIDENT, 1922.

It is hoped that far-reaching resolutions may be carried, and strong committees appointed for conference action.

You will observe by the programme that your retiring board appointed five standing committees and the opinion has been expressed that there should also be Parliamentary, Legal and Educational Committees.

Organizations should, of course, function by means of their standing committees, and progressive Horticultural Societies will appoint local representatives, with whom the Provincial Committees may correspond, when affairs of importance are being considered.

The forty-third meeting of the Ontario Agricultural Experimental Union was held at the Ontario Agricultural College, Guelph, recently. This year's president, Mr. J. B. Spencer of Ottawa, is well known to this Association, being a past president of the Ottawa Horticultural Society, and a frequent speaker at Conventions. The subject dealt with in his address to the Union was the Beautification of Home Surroundings in different parts of the country. The members of the Union were urged to place their knowledge of Horticulture at the disposal of the Organization, and to support the good work being done by Horticultural Societies in the Province. The subject was exceedingly well received. It will be to our interest to find members of the Experimental Union, living near by, and to invite them to address the Horticultural Societies. The Secretary is Dr. C. A. Zavitz, O.A.C., Guelph, and he will assist our secretaries in locating members of the Union.

Your directors deeply regret having to record the death during the year of the Director of District No. 5, Mr. W. B. Burgoyne of St. Catharines, whose outstanding love of flowers was expressed in his adornment of St. Catharines with roses. An offering of his favorite flowers was made to Mrs. Burgoyne on behalf of the Association.

The tide of immigration which is expected to come into Ontario in the near future, will only remain contented with Canadian rural life, if happy home surroundings can be developed.

Loneliness has no terrors for the gardener. Can there be loneliness when the rose is coming into bloom, when the bulbs are bursting through, when the full daisies are beloved? "Dear Earth, I do salute thee with my hand." It is our part as members of the Horticultural Association to help the newcomers to make their "household patches" for the sake of both their bodies and their souls.

H. J. Moore: Plant registration has been in effect during the last two years in the Province of Ontario. The matter was taken up nine years ago in a convention in London, and subsequently in Toronto, then again in London, and finally two years ago, Plant Registration was effected. The Plant Registration Department has been trying to get funds to carry on the work, and we believe now it is in a position to do so. Any information relative to the Plant Registration Department may be obtained from me. Literature is in course of preparation. We have been depending upon the fees for registrations to have this matter printed. In a short time we hope to have a supply of literature printed and distributed.

Along the lines of suggestion of the president, it would be well if this Association would appoint a committee to act in conjunction with the Florists, Gardeners, Fruit, Vegetable Growers and Nursery Institutions of Canada, so that we can make this Plant Registration a truly national one.

COMMITTEES.

The following Committees were appointed:

Resolutions: *Rev. W. M. MacKay, Messrs. Norman, McQueston, Perrin, Nunnick.*

Nominations: *Messrs. J. P. Jaffray, James, Dr. Smith, R. R. Graham, Dr. Scott, George Henry.*

SOILS AND FERTILIZERS FOR THE AMATEUR GARDENER

E. S. Archibald, Director, C. E. F., Ottawa.

Even amateur gardeners must have constantly in mind the three important factors of production, that is, increasing production, improving the quality of the product, and decreasing the cost of the product. The essential requirement for all these is to have the soil in proper physical condition and containing the necessary fertilizing ingredients in an available form. The study of the above problems, then, is of just as great importance to the amateur gardener as to his professional fellow.

Soils for Gardening: The ideal garden soil is a rich friable loam. Unfortunately, however, this ideal soil is not available to the majority of those wishing to grow garden crops. Hence, it is imperative that the soil available, whatever it may be, either sand, clay, muck or any combination of these, must be so treated and so modified that good results may be obtained. The day is past when it was considered that only a special type of soil was suitable for garden crops. Modern methods of handling soils will permit of profitable crops being harvested from any type of soil which may be available.

Time does not permit us to go into any lengthy discussion upon the importance of thorough cultivation of soil, rotation of crops, proper drainage, etc., but every good gardener should thoroughly understand the importance of these. What may be emphasized here in this regard is that proper cultivation includes fall ploughing or digging, working the manure thoroughly into the soil at that time and leaving the land in good shape for spring work. It also includes thorough and constant cultivation of the soil for moisture conservation, destruction of weeds and liberation of plant food from the early spring until the crop has covered the ground.

Fertilizers: The fertilizers are of the utmost importance and warrant the most careful study, since such a large percentage of those engaged in amateur gardening are doing so at a loss, because they are using fertilizers which are unsuited to their soils or crop conditions. The most important requirement of any fertilizer is that it contain the main fertilizing ingredients, namely, nitrogen, phosphoric acid and potash.

Analyses show that the first nine inches of our medium to poor soils contain .2% nitrogen, .1% phosphoric acid and .3% potash, or a total amount per acre of 5,000 pounds nitrogen, 2,500 pounds phosphoric acid and 7,500 pounds potash.

Considering that a crop of 200 bushels of potatoes per acre contains only 42 pounds nitrogen, 18 pounds phosphoric acid and 60 pounds potash, it is seen that such a crop takes, even from our poorer soils, a relatively small percentage of their actual fertilizer content. The reason why a proper application of manure or fertilizer, or both, to such soils, stimulates production from 15 to, in an extreme case, 200%, is owing to the availability of the fertilizing ingredients thus applied.

Unfortunately we cannot here give this subject the detailed study it deserves, but I would emphasize the need of everyone intending to garden to study carefully the values of manures and fertilizers, the time to apply them and the amounts to apply, not only to suit his or her particular soil but also the type of crop to be grown, since each type of crop requires a special time of application and a special amount of fertilizer applied.

Value of Barnyard Manure. The value of this cannot be overestimated. Barnyard manure is the most important source of soil fertility which we have. It not only contains per ton 12 pounds of nitrogen, 4 pounds of phosphoric acid and 10 pounds of potash (these amounts varying more or less according to the source of supply and the care with which the manure has been handled and applied) but above all it is the source of humus or decaying vegetable matter which is of even greater importance to the soil than are the fertilizing elements themselves supplied by the manure. Humus, in its turn, is a source of nitrogen, and, in fact, is the regulating factor as to the preservation of nitrogen and its liberation as nitrates in the soil. In gardening the physical effects of humus are most important to plant growth, and, finally, its biological effects are controlling factors as to whether the soil is to be a "dead" one or "live" one, that is, a soil in which bacterial organisms are breaking down the fertilizing ingredients.

Commercial Fertilizers: Neither will time permit us here to enter upon a detailed discussion of commercial fertilizers. We can only again emphasize that this subject demands the most careful study. It may, however, be said here that as yet our knowledge of commercial fertilizers is only fragmentary, hence each gardener must study his or her own gardening conditions in the endeavor to ascertain what commercial fertilizer will best suit requirements. Again, the function or place of a commercial fertilizer is to act as a supplement to, rather than as a substitute for, barnyard manure. It should be applied in the minimum amount to obtain the maximum profit from the resulting crop. This does not necessarily mean the maximum crop, as not infrequently a small increase in yield obtained by a heavier application of fertilizer is unprofitable.

Again, the source of the three fertilizing elements contained in commercial fertilizers is very important, as indicating their availability and suitability. Many commercial fertilizers sold contain reasonable amounts of the three main fertilizer ingredients, but these ingredients become available to crops so slowly that they are of little value in stimulating growth at the time they are most needed.

The importance of using a high grade fertilizer rather than a low grade one must also be borne in mind. Although the former may be more expensive per ton the gardener will find that almost always, in securing the high grade product, he is buying his fertilizer units more cheaply.

If, after careful study, the gardener is sure that a ready mixed fertilizer is satisfactory for his soil conditions and crops, the purchase of such is to be recommended, otherwise it will pay him to buy the various ingredients and mix them according to his soil and crop requirements. In fact, unless one has had experience in applying the individual ingredients rather than compounded fertilizers, it is almost impossible for him to ascertain and understand the requirements of his soil.

Nitrogenous Fertilizers: Nitrogen is the most important—in fact the controlling factor, in soil production. An adequate supply of nitrogen in the form of nitrates is imperative to the plant if it is to use to the best advantage the other fertilizing elements of phosphoric acid and potash. Moreover, growth in the early part of the season for all garden crops and especially for early crops depends upon the supply of immediately available nitrates in the soil. Nitrogen is best supplied by application of barnyard manure, or commercial fertilizer in the form of nitrate of soda. The factors regulating nitrification in the soil are bacteriological activities, warmth and moisture in proper proportions.

On this subject there is a very large amount of information available to readers in the results in published form of years of work on the Dominion Experimental

Farms. We have indicated the importance of a supply of nitrates in the soil and would, in this connection, emphasize equally the danger of losses through leaching and loss of nitrates, unless the soil is properly worked and cropped.

Time will not permit our even mentioning the various commercial fertilizers on the market supplying nitrogen, phosphoric acid and potash, but to emphasize the need of studying these we would quote one result obtained with a crop of potatoes. Acid phosphate, a high grade and fairly expensive source of phosphoric acid, produced a potato crop of 169 bushels per acre. Basic slag, a distinctly cheaper source but not containing the fertilizing ingredients in such a readily available form, gave a crop of 188 bushels per acre. The source of phosphoric acid, therefore, is just as important as it is in the case of nitrogen or potash and deserves just as careful study.

It can only be said, therefore, in summarizing the subject that it is necessary for every amateur gardener, desiring to score the greatest success, to study the character and deficiencies of his soil and to plan to meet these requirements and supplement these deficiencies by the application, at the proper times and in the proper proportions, of manures and fertilizers. He must also understand the requirements of each garden crop he proposes to grow and arrange that such crop have at its disposal, when needed, a sufficient supply of the fertilizing ingredients it requires for maximum profitable production.

Miss Blacklock: How would you treat a soil that has a gravelly subsoil and the water very close to the surface, and in the spring the soil is very cold, and in the summer it dries out terribly? Is there anything that would have lasting properties in the way of humus for such a soil besides barnyard manure? Would forest leaves be beneficial before they are decayed, to hold that moisture, or do you have to get them to a certain stage of decay first before they are in the best condition.

E. S. Archibald: I would judge that that soil being cold and late certainly needs drainage as a basis. Under-drainage warms the soil, makes it earlier, simply because there is that much less evaporation necessary. Drainage I believe to be a very necessary consideration there. Then as a source of humus, forest leaves or other material are usually available in such small quantities, and are so difficult and costly to get that it would probably be more profitable to consider leaving say half of that area idle and putting in a good crop of some legume. If the biennial clovers, such as red clover, alsike, are too slow for that purpose, I would say use an annual sweet clover or some of the vetches, and plow it under. When you get a good crop there is no question but the legumes are the second best source of humus. This contributes nitrogen at the rate of 50 to 150 lbs. to the acre, and when you begin to pay for nitrogen in the form of nitrate of soda, even at present prices, that is a valuable contribution. I would say try to re-arrange your rotation so as to use a legume for a manure crop.

A PROVINCIAL HORTICULTURAL SHOW

J. E. Carter, Guelph.

For some years the question as to registration and getting together in the interest in common of Horticulture has been taken up from time to time. Mr. Moore mentioned this morning that the question of registration had already been taken

up by the Province or a Provincial organization. I am of the opinion, and I think you are, that at as early a date as possible this should be made Dominion-wide. Ontario registration is all right, but in this country I am quite satisfied that what we want is a national registration, whether your plants are in Quebec, Nova Scotia, British Columbia or Ontario. It means there is a registration and standard fixed for that particular specimen, and it means it is undertaken by the Dominion of Canada, not by a province or by an organized body such as the Pæony or Rose Society.

Some may disagree with me, but if we can advance that idea or carry it out we will be the first country to have a national registration.

Would the establishing of a Provincial Horticultural Show advance our work in the Province of Ontario?

Bloom on a 71 Year Old Apple Tree in the Moffat Garden, Perth.

After careful consideration I am of the opinion that it would be of great assistance to this Association and would greatly stimulate the work we are engaged in.

A Provincial Show would, however, only meet part of our requirements, as its scope would be Provincial only. This being true, what is necessary to meet our requirements? My answer is "A Dominion Horticultural Exhibition" embracing flowers, fruit and vegetables.

It would be possible through an organization of that kind to secure a Dominion Registration Act that would apply to the entire country.

Also a Standard Act or regulation could be developed. These two if properly framed and carried out would greatly encourage the introduction of new, and improve the quality of the present, varieties.

More interest would be created by holding a Dominion Exhibition rather than a Provincial, because to be a winner would mean having the best in Canada.

If a Dominion Government grant was given to a Province for the purpose of assisting a Provincial Exhibition, grants would have to be given to all Provinces, the grant being divided would naturally be only about one ninth to each Province. If a Dominion Exhibition is held the total grant would go to one show, this would make it possible to hold a show such as our work warrants.

The organization necessary to operate a Dominion Exhibition would largely follow the plan of the Royal Horticultural Society in England. Prizewinners at the Dominion Exhibition would occupy much the same position here that those at the Royal Horticultural Society do in England.

The fact that these honors could be secured would make our exhibition the Mecca for all those interested in the advancement of Horticulture.

It would advertize Canada and bring exhibits and exhibitors from all over the Continent of America, would demonstrate what can be done by Horticulturists and would greatly develop our work both as professionals and amateurs.

It would encourage a broader knowledge of Horticulture in all its branches and would encourage more of our boys and girls to take up the work as a profession.

Live stock and grain judging is now taught at our Agricultural colleges and has become an art. Is it not possible through an organization such as a Dominion Exhibition to educate men and women who would be available and competent to judge at our local shows? I say without fear of being seriously criticized that few judges at our local shows have a real knowledge of standards. Let us have judges trained in the art who can, as our live stock and seed judges do, take part if necessary in an International Judging contest.

Registration and standards would bring from the United States and other countries those desiring to register new varieties. This would make the Dominion Exhibition the best known and as powerful in its scope as any exhibition held in any country.

The organizations such as the Horticultural, Vegetable, Fruit Growers, The Rose, Pæony, Iris and Gladioli Societies together with the experts in our Federal and Provincial Government's service make it possible to carry out a Dominion Exhibition and Registration Act. On the 31st of January, Dr. A. H. Scott of Perth, Messrs. J. E. Spencer, George Simpson and the speaker, interviewed Dr. Grisdale, Deputy Minister of Agriculture at Ottawa and placed before him the subject of a Dominion Horticultural Exhibition and Registration Act. Dr. Grisdale was interested and informed us that, provided those interested in flowers, fruit and vegetables were prepared to co-operate, he would seriously consider a grant and assist in anything that would advance the work of our organizations.

In conclusion, I am of the opinion that we can develop the Horticultural interests of the Dominion to a marked degree by organizing a Dominion Horticultural Exhibition of flowers, fruit and vegetables and securing a Registration and Standard Act.

The Fruit Growers' Association was in convention in Toronto yesterday. We waited on them, and had a committee appointed as recommended in this paper, and they are also interested with us in the passing of a Registration Act.

FLORAL ADORNMENT OF A CITY AND RAILWAY RIGHT-OF-WAY BY A HORTICULTURAL SOCIETY

Dr. F. E. Bennett, St. Thomas.

We have with us to-day discussing this question Mr. Winegar of the C.P.R., Montreal, and Mr. S. G. Skinner of the Grand Trunk, Toronto, and one of the prominent Gladioli cultivators, from Guelph, Mr. Marr. The trip that I am going to take you on to-day will be "Cook's Tour of the Flower City," showing work done by the Horticultural Society of St. Thomas, which embraces about sixty pictures. A number of the slides are here specified.

This is one of the bulbs propagated in a worn-out garden spot, due to intense cultivation. Part of the ground had been put in vetches and rye the year before, then it was fed with bone meal. The Doctor here showed another bulb from Holland with results which he said they got from intense cultivation and watered with the Skinner irrigation system.

Here is the right of way of the Port Stanley Electric road station surroundings, and here you see a splendidly grassed area, fine maples and a fine rose garden with a border of Erna Teschendorf.

Next picture: The station of the Radial railway, a very fine bed in the foreground, our Main Street is along here, and this is planted in tulips this year, last year with hyacinths, with a bed of crocuses. That was just like every other railroad yard a year or two ago.

The Hydro Station, quite a tasty little station, and splendidly beautified with flower beds, etc. Hydro men are sometimes accused of being tree butchers. These men are tree lovers. Their tree trimming is under the supervision of our landscape gardener.

The Michigan Central Railroad give us $500 a year as a donation towards the keeping up of the work. In another year we hope that every railway area in St. Thomas that is not used as an industrial siding will be used in park areas. You will realize what a benefit that is to any city when the railway areas are beautified.

This is the municipal bird house and is the home of the purple martin. We have three of these. A splendid thing for the preservation of bird life, which does so much for us towards the eradication of pests.

Going into the working man's district, I can honestly say there are not five real shacks in our town. This man became interested in Horticultural work, and put up this pretty little home, and has very neat boxes around.

Passing on from this we are going down to see the 12th annual show of American Gladioli, the most successful that Society ever held.

Next view will show you one of the class rooms. This is one of Mr. Dyner's exhibits. He gave to our trial grounds nearly 4,000 bulbs for trial. This is the St. Thomas exhibit in this hall and we are credited with having one of the finest exhibits in all the shows. These flowers are from our trial grounds, except the Purple Glories, which were taken from my garden.

We are now in the trial grounds of the St. Thomas Society. The American Gladioli Society have named this as the official trial grounds for Canada. Notice the Skinner Irrigation System. We had, roughly estimating, 35,000 Gladioli planted in rows. The Skinner system throws a stream operated by engines, that keeps our garden in perfect order. We are going to propagate a great many biennials there and we have tested annuals that are sent to us. We are growing biennials

for our own use for auction to our members, so that we will be able to supply our members with them. We expect to hold a large show again on August 23rd and 24th.

Mr. Archibald spoke about fertilizers. This year, at the bottom of this trial ground we had the Streets Department deposit the leaves in all that district. Between 700 and 800 loads of leaves are there rotting. Think of throwing the finest fertilizer imaginable away. We have them put in there for next year, when they become an asset, and we have a supply for our members who want to fix up a bed. The grounds themselves are all plowed under and put into rye.

Street Improvement Society—the Council's support was enlisted. This is London & Port Stanley property all along here. This was an unsightly area, fairly good homes, lumber piles, unkept, but now in keeping with the spirit of beautification, even the lumber yards keep their grounds in beautiful condition. The value of the property on this side has increased enormously, whereas this used to be called just "Railway Street." The property has increased in value, and of course the assessor raised the taxation and that helps the City. Our residential property here has become valuable because they look on this beautiful boulevard.

Here was the first bed we put in some thirteen years ago. We put posts here to keep the kiddies back. Now, that was a slander on the children. Children will not touch flowers if you put them on their honor, and tell them they are their beds and teach them Horticulture in the schools. Our membership then was 125 and the people said: "Now, if that is what you are going to do, we will join the Society," and the membership increased gradually until it was over 2,000 just because we are doing this work and trying to make good. A member of our Council, when we asked for a grant, apologized for not giving us $1,500 last year.

A bed of cannas, etc., with a border of geraniums. Last year we got away from the sterotyped bed of geraniums and put in annuals furnished by the Municipal greenhouses. We have about 125 to 150 of these beds—in the spring time they contain tulips, each species being labelled, as an educational feature.

A perpetual exhibit in a jeweller's window, just one or two blooms are set up with the proper name and where grown. This is one of the biggest educational features.

A decorated business corner on Main Street, with little rest seat. The business houses furnish the plants and do the planting along here and put the vines up though they are guided by the suggestions of the Society, which works out the decoration plan.

A fine fountain with little children playing among the spring flowers.

Massed shrubbery around the borders of the house—typically fine planting.

Another of the waste places reclaimed. The crude fence is to be removed this year. Driveway on one side, and a bed of roses at end, also pæony bed with bird house in centre.

Peony beds of which Dr. Bennett said "they were very proud," with Festiva, Maxima and 180 other varieties.

A collection of Lilacs. Mr. Dunbar gave us 13 of his own hybrids to add to that wonderful collection of about sixty varieties.

A picture of a brakeman's home, showing lovely pond full of fish, little dock for kiddies' canoe. Little, fine rustic bridge. The owner left everything

as nature had planted it. He did not cut down the sumachs, but planted bulbs, daffodils, etc., all along the hillsides. Mr. Dunbar has given us the suggestion of using hawthorne.

A bird house—Mrs. Flicker looking out, Mr. Flicker looking in.

Lovers' Lane. In this picnic ground we are planting all these hillsides with native shrubs, and roses, etc., that is railroad work on the London and Port Stanley.

Another view of grounds which have all been beautified by the London and Port Stanley Railway.

ADDRESS OF WELCOME.

A hearty address of welcome was extended the Convention by Mayor Maguire.

Mr. Middleton, of Lindsay, here moved a vote of thanks to the Mayor, which was seconded by Rev. Mr. Scott, and carried unanimously.

The President then read the following message from Lady Byng:—

"Please convey my cordial greetings to delegates in convention. Much regret I am unable to attend personally."

Upon motion a suitable acknowledgment was sent to Lady Byng.

RAILWAYS AND HORTICULTURE.

B. M. Winegar, C.P.R., Montreal.

I am complimented on being invited to your meeting to-day and to discuss your work with you. I do not consider this a personal invitation but rather one to the Canadian Pacific Railway to send a representative who might tell you something of the work we are mutually interested in.

Your societies are doing a wonderful work. You are creating and fostering the love of the beautiful. You are getting results which are artistic and you are doing your work effectively and economically. Your cities are becoming more attractive yearly and the fame of many of your local organizations is being widely extended.

When Dr. Bennett told me of the extent of the plans of the St. Thomas Horticultural Society, and I had seen the results of the past efforts, I was amazed. Few other communities on the American Continent carry on so comprehensive a scheme. Your work is especially gratifying in that you are rewarded in a year or two after your planting. Consider the poor forester whose efforts are only appreciated by his grandchildren.

I wonder if you realize to what extent your ideas are perhaps unconsciously taking root with young Canada. The school boy and girl have before them practical illustrations of what city beautifying really means. Later on this work of yours will bear fruit and we shall have in far off towns enthusiastic gardeners, horticulturists and town planners who come from your homes and your schools, and who have inherited their love of these things from you. To me this is the outstanding feature of your work, perhaps not the most

pleasing now but one of the big factors in making for clean homes, clean surroundings, attractive cities and towns and good clean government. After all, a lively interest in one's own environment makes for all that is best in life.

Why does the Canadian Pacific Railway beautify its hotel grounds, its stations, its bunk houses and its section houses?

For the traveller who spends many weary hours on a transcontinental train the sight of a garden is a joy. He appreciates our efforts and his ideas of the town he goes through many times are influenced by the appearance of the station and its grounds. Later on he will say, "I remember that town, there must be a fine spirit there, the station was neat and the little garden was well kept, and the surroundings attractive."

All citizens like a garden at their station because they are proud of their home town and want the stranger's first impression to be favorable. After all the station is the first introduction to the town, and it should be pleasing to the eye.

Lilac Time at the C. E. F., Ottawa.

The finest exhibits we have in Eastern Canada have been made and are being made voluntarily, and without cost of horticultural advice or extra time, by the Company's employees. Here the baggagemaster develops a garden, there a locomotive engineer makes the display, here the section foreman, there the agent, or the foreman of the shops does the work.

The station agent and the operator, who are the men that you usually meet in transacting business with a railway, like and appreciate a garden, for they get as much pleasure out of this as anything they can do. Many of these men live in the company's dwellings, many in stations, so the company's pro-

perty is their homes. The agent and the operator make many friends over his garden. When a station boasts of a good garden, the agent is complimented by stranger and friends.

Most of the company's section foremen live in a company's house along the right of way, and they are especially keen for improvement. I sometimes think that some of the best landscape gardeners we have on the Canadian Pacific are the wives and daughters of employees.

A number of our section foremen are members of your societies, and they have been complimented from time to time by your local papers on the showing they have made.

The grounds around bunk houses are improved with gardens and lawns, as it makes for comfort for the engine men when away from home. After being on an engine a number of hours a cool, clean, shady spot is appreciated.

There is a wonderful amount of horticultural talent among the officers and employees of a big organization like ours. Two of the best gardeners I know are baggagemasters. These men are practical horticulturists. They would deny this if they were asked, but they get results year after year.

Interest and enthusiasm are kept up in gardening by the use of circulars relating to the making and maintaining of gardens, by bulletins which show what others are doing, by personal letters and best by personal contact. We try to see all our people who are interested in gardening.

The long waits one must put in at times around railway stations are softened when the garden is interesting.

Gardens make for neatness both around the stations and along the road. Neatness means cleaning up all debris and litter which accumulates along a right of way. It sometimes means a habit which includes the salvaging of small parts of equipment which might otherwise be overlooked.

I know of no work on a railway which brings such happy results. All officers and employees are interested in the work and our plans are always assisted. As I pointed out before, there is a fine lot of ability along these lines in a big organization like ours.

You can readily appreciate the difficulty encountered in preparing plans and making the proper selection of seeds and plants, shrubs and trees. The distribution of stock is also a problem. Plants which might do in Windsor or St. Thomas or London or Peterboro or Lindsay will not stand the climate of Northern New Brunswick or Maine. Further, the plant that will do well here is useless along the Company's lines along the north shore of Lake Superior, especially near White River, which is about the coldest part of our line. Late spring and early fall limit decidedly the species to be used. The Company's officer in charge of that part of the line north of Lake Superior has discovered after years of experimenting that pansies not only give the most satisfactory display during the spring, summer and fall, but that they still bloom after light snow falls and the early fall. On this part of the line the floral display consists of lawn and pansy beds only.

On the prairies we have extremes in climate and little rainfall. Here again the list of plants supplied is necessarily very limited.

We supply what we call standard packets of seeds which can be planted directly into the ground and do not require transplanting. Nasturtiums, Marigolds, Zinnas, Alyssum and Poppies. These varieties have been found successful for all of our gardens except those north of Lake Superior.

Bedding plants, Cannas, Geraniums, Asters, Alyssum, Lobelia, Phlox, Marigold, Zinnia and Verbena are distributed. Our annual purchases of this class of stock are about 100,000 plants. Besides this we distribute about 90,000 pansies.

Ground bone meal in 5 lb. packages are sent to a great number of stations for fertilizer.

Trees such as the Lombardy and Carolina poplars, maples, ash and elm are distributed.

The most satisfactory shrubs are Caragana, Willow, Honeysuckle, Lilac, Spirea, Japanese Tamarix, Deutzia, Weigelia, Elders and the Mock Orange.

The perennials we find most successful are the Delphinium, Gaillardia, Iris, Hollyhock, Columbine, Lychnis, Pæony, Phlox, Sweet William and the Pinks.

We are making permanent displays at all our stations as far as is possible, as these give the most satisfactory results with the least care. These displays improve from year to year.

We supply the Artus, Chrysolora and the Lord Kitchener tulip bulbs for spring display.

The purchase of all plants is made by a floral committee with office in Montreal.

Landscape work has brought me many acqaintances and I hope some friends among you. I admire the man who has for his hobby gardening and I envy the man who owns his own little place and raises the flowers he loves best.

S. G. SKINNER, Grand Trunk Railway, Toronto, followed in a brief address, saying: Mr. Winegar has taken up with you very fully the æsthetic side of the landscape work in connection with the railroads. I would like to tell you a little more in connection with particulars where the Horticultural Societies and the railroads can work together. I think that the Horticultural Societies lost an opportunity a few years ago in not getting after the railroads to put on a Horticultural Department to get the stations beautified. It was left entirely to the initiative of the railroads. That was one place where the Horticultural Association slipped up. However, both the C.P.R. and the Grand Trunk now have a full working Landscape Department. It is their policy, wherever possible, to beautify each and every station. They are starting, of course, with the larger stations and with competitive points, but their intention is to gradually work in the smaller and less important stations. Now as to the ways in which the horticultural societies can co-operate with the railroad. We have already had a few examples of that. I can mention particularly where the St. Catharines Horticultural Association cooperated with the Grand Trunk. Many of you who have passed through St. Catharines over the Grand Trunk within the past three years will have seen a great change there. A large part of the work was at the expense and under the direction of the railway but the local Horticultural Society must be given credit. They allowed us, I think, approximately $800 worth of material. They also gave us suggestions as to the methods in which we should go about fixing up our property. At that place we spent something in the neighborhood of $2,500, including the station. Now that is exceptional. We don't as a rule, spend as much money as that but the policy of the G.T.R. and the C.P.R. is to do their best and beautify the station as much as possible.

The Horticultural Society of St. Thomas, with which Dr. Bennett is connected, has done a great deal in connection with the London and Port Stanley Railway, and they have also assisted us, and the St. Thomas Horticultural Society has given

every other town something to live up to in connection with station surroundings. It has been an education both to Mr. Winegar and myself, although we have been on this work for a number of years and we have learned a great deal from St. Thomas.

On behalf of the Grand Trunk, I would like to invite members of any Association through whose town our lines pass, to offer me suggestions, and to get in touch with us at any time. We will be only too pleased to co-operate with the Horticultural Societies in the towns at any time.

REPORT OF SUPERINTENDENT

J. Lockie Wilson, Toronto.

No organization in this Province has made such rapid and substantial growth as the Horticultural Societies of Ontario. Last year the membership was 32,000, and the expenditure of the Societies was correspondingly great. The number of branches was increased by twenty-five, the largest in any one year yet recorded and the gospel of the beautification of cities, towns, villages, and rural municipalities and particularly home surroundings is reaching into the farthest corners of our banner Province. Nineteen twenty-two will, we are confident, eclipse the splendid success you have attained in the year just closed. Applications from every section of the Province have been made to me for speakers to spread the desire for a more beautiful Ontario, but the grant at my disposal is limited and I have been unable to comply with many of the requests. The year just closed has been the best in the history of our organization and the officers and directors elected by you have been energetic and enthusiastic workers and the good accomplished reflects credit on all concerned.

The exhibit of our Association at the Canadian National Exhibition was a creditable one, and entailed great labor and a good deal of expense to the societies which assisted in supplying flowers. I am doubtful, however, if the labor and expense entailed brought very much advantage to our Societies, as professional florists and such exhibitors as Sir Henry Pellatt, Sir Jno. Eaton and others were able to make such a varied exhibit in the Horticultural Building, which somewhat detracted from the display of our amateur Horticulturists. The continued renewing of our exhibits during the two weeks of the Exhibition entailed a good deal of labor, and it will be for this convention to decide whether the exhibit will again be put up, especially since the Canadian National directors refused to lend any assistance, financial or otherwise, in the putting up of the display, such as they did the first year, although our exhibit by amateur horticulturists chiefly benefited them by brightening up and making more attractive the general display in the Government Building.

For the first time we have with us representatives from professional organizations in Horticulture, representatives of those who make a business of producing our requirements in a commercial way. Ours, it is clearly understood, is an organization of amateurs and it is of interest to us that those engaged in the production of high class seed, bulbs and shrubs and the introduction of newer and more beautiful plants and flowers should receive every encouragement from us in the

work they are doing, and we expect them, where our Societies buy in a wholesale way, as they do, to give us substantial reductions from the regular retail price list. If the commercial florist is more successful, financially, to-day than ever before in his history, he owes it to the 32,000 members of our Societies and their families that have had inculcated into them a greater love for flowers and a consequent consuming desire to increase the bloom in their gardens.

In Memoriam.

Recently there crossed the Great Divide two of our noble workers for the cause we have at heart. In the passing of the late W. B. Burgoyne, Canada has lost one of her most enthusiastic and enterprising citizens, one who was known far and wide for his energy and unfailing devotion to the cause he had at heart, the making of his country a more beautiful and more livable place for all. He began this work in his home city of St. Catharines nearly twenty years ago, and his heart was set on making it the Garden City of Canada. His wonderful work will live throughout the years that are to come, and men will rise up and bless him. When the flowers in the beautiful rose garden that he donated to St. Catharines bloom in the incoming springs, the generous donor will continue to be remembered. Time will not permit, nor is it necessary to recount the numerous benefactions of this patriotic citizen. His last act was to leave in his will $10,000 to be utilized for an additional park area for the city he loved so well. W. B. Burgoyne was the first president of our Association, and was a member of our Board continuously since the inception of the Ontario Horticultural Association. It is not too much to say that never again will we be honored by a greater worker in the cause of civic improvement. He leaves a place in our ranks that can never be filled.

The late John Glassford, Chatham, though not so widely known as Mr. Burgoyne, was an honored member of our Board and an earnest worker in our cause. He, too, will long be remembered by his associates as an untiring official and a worthy citizen. We all deeply deplore his passing.

Rural Cemeteries.

A line of work which has been undertaken by some Societies is the care of cemeteries adjoining towns and villages, and a great deal of improvement has been accomplished. Societies which derive a portion of their membership from rural homes and those which are organized as township Societies could extend this work to embrace cemeteries in the country, now often sadly neglected and also the private burying plots where those "forefathers of the hamlet" sleep, whose energy and perseverance carved out for themselves and us homes from the primeval forests that at that early date covered this land. Many of their descendants have died out or have migrated to other countries, their farms have passed into the possession of strangers, who have no concern for the sacred dust that lies beneath the sod, and the headstones with the names of those stalwart pioneers inscribed thereon, have fallen and are overgrown with bushes, weeds and grass. Here is a splendid opportunity for good work by our members. We have built monuments and memorials to our gallant war heroes, why should we forget the last sleeping places of those who blazed the trail and hewed down the forest on the country side?

Much time and discussion are being indulged in, bewailing the fact that boys and girls are leaving their farm homes and crowding into urban centres. Day in

and day out in the press and from the platform this is being announced without propounding satisfactory remedies therefor. I am of the opinion that if twenty years ago Horticulture and the beautifying of homes and their surroundings had been given their proper place in particularly our rural schools, and if trustees had been encouraged and shown how to improve school surroundings by the planting of trees, shrubs and flowers it would have created a pride and have inculcated the love of the beautiful in the minds and hearts of country boys and girls for the things that really count in life, and there would have been a greater desire to remain in

Mock Orange.

the healthful country home. We can do something through our rural Horticultural Societies to retrieve omissions of the past by sending expert lecturers to rural sections and giving every encouragement to the brightening of rural homes and rural schools and advising as to the laying out of their grounds and the proper varieties of trees, plants, shrubs and flowers best suited to the different localities. Do treeless, shrubless, flowerless home surroundings tend to make contented and happy the boys and girls who are now said to be leaving the farm houses of Ontario in an endless trail? I trow not: but I know, as you know, that in number-

less farm homes in our Province the things that count are not neglected and on these farms the boys and girls remain contented and happy and the lurid glare of the city streets with their dust and noise and madding crowds have no lure for them. Where these better conditions do not prevail there is work for this Association to do.

We are pleased to know that Mr. H. J. Moore has been appointed to arrange for the planting of trees and flowering shrubs along the new highways that are being constructed, and which will add so much to the financial, as well as, the æsthetic side of Ontario's citizens.

In the improvement of their station grounds the Canadian National and Canadian Pacific Railways are progressing. They have done something in this regard. Much yet remains to be done.

In closing, I wish to thank you all for the harmony that has always existed between my branch of the Department and the officers and members of this Association. May we never grow weary in well-doing and your splendid record never fade, for, after all, a life of service is the only one worth living. The reward for work well done will be sure and certain. I thank you.

Mr. J. P. Jaffray, of Galt, in a few complimentary words, moved a vote of thanks to the Secretary for his comprehensive report.

Rev. Dr. Smith, St. Catharines, seconded the motion, referring particularly to the death of Mr. W. B. Burgoyne, and expressed appreciation on behalf of the Society to the city of St Catharines for the kind words spoken of Mr. Burgoyne. Carried.

REPORT OF DELEGATE TO AMERICAN CIVIC ASSOCIATION'S CONVENTION.

C. A. Hesson, St. Catharines.

The American Civic Association was organized in 1904 for the promotion of city, town and neighborhood improvement and for the protection of natural beauty. It has assisted hundreds of communities to improve living conditions, has issued many bulletins on housing, zoning, city planning, parks and playgrounds, billboard control, smoke prevention and related subjects; it is prepared to render service to individual as well as civic groups of civic-minded men and women.

Your delegates appointed to the Convention of 1921 consisted of Mr. J. Lockie Wilson, Mr. G. H. M. Baker and myself. Mr. Baker found it impossible to attend. The Convention was held in Chicago, somewhat later in the year than usual, November 13th to 17th, and upon the invitation of the Chicago Association of Commerce, with the active support of the City Club of Chicago and the Woman's City Club of Chicago.

The delegates were welcomed by the Chicago Convention Committee, of which Mr. Clifford W. Barnes is chairman—he being also the promoter and president of the well known and much talked of services of The Sunday Evening Club in Orchestra Hall, and a meeting which your delegates were fortunate enough to be able to attend. They were given seats on the platform facing some three thousand (thousands having been turned away for lack of room) of the non-church goers of

the city, taken from all classes and all nationalities, and whose manifest interest and pleasure in the services held were most remarkable, affording indubitable evidence of what can be done in the way of social service and uplift if only proper mediums are used to reach the people. After the Song Service and informal Bible Talk with prayer by the Rt. Rev. Samuel Fallows, D.D., LL.D., Bishop of the Reformed Episcopal Church and Vice-chairman of Chicago Chapter, American Red Cross, the meeting was addressed on the then subject of subjects, The Washington Conference (the first meeting of which had just taken place), the speakers being Miss Jane Addams, of the Woman's International League of Peace and Freedom, and Hon. John Barton Payne, former Secretary of the Interior in President Wilson's Cabinet and President of South Park Commissioners.

The week of the Convention was known as "Civic Revival Week" in Chicago, there being also an annual convention. The City Managers' Association, The National Association of Civic Secretaries and The National Municipal League.

One regrets to report that the agenda of the Convention carried but little matter of vital or special interest to this Association, though the subjects discussed were all relevant to our work; for instance, under the heading "Who is doing the civic work in our towns," we had papers read on "The Chamber of Commerce," "The Forum City Club," "The Militant City Club," "The Men's and Women's Civic Clubs," "The Real Estate Board," "The Technical Societies," "The Municipal Voters League," "The League of Women Voters," "The Bureau of Municipal Research," "The Council of Social Agencies," and a debate on "Can a Modern Chamber of Commerce Satisfactorily do the Work of Civic Associations?" Amongst other heads of discussion were "Popular Support for Civic Programmes," "Gains against the Nuisances," "Real Reductions in Cost of Small Houses," "Our National Parks and Playgrounds," "What Zoning can do for Chicago," "High Cost of Housing," these all again divided under various sub-heads.

Judging from these papers, especially from those first referred to, all the agencies mentioned are essential to the welfare and betterment of civic work, but it is to be noted that work, such as carried on by this Association and its affiliated Societies, has not as yet been found to be essential or worthy of being brought up for discussion.

From the discussion on the subject "Popular Support for Civic Programmes," I bring you this. Concentrate on the one thing you want, then get two or three others to become equally interested and enthusiastic, then organize, educate, start a publicity campaign, collate all the laws bearing on the matter, then finance and follow up with a fortifying of your position gained, by providing for continuity of action.

On the subject of "Park Needs" there is this point: First get recreation or playgounds, this influences (through their enjoyment, especially by the children, and as evidence of things accomplished) any subsequent effort in behalf of the larger plans for park areas in any community.

Under the head of "Nuisances" there was an outstanding paper, "What do We Know about Smoke?" this was read and illustrated by a Mr. Monette, a recognized authority, and one whom this Association would do well to invite to a future convention.

Under "Billboards," we had an address from Mr. J. Horace MacFarland, which was quite interesting and disclosed a fact, (which seemed to be considered an advance made) that the Supreme Court of the United States has found that a city

or municipality may pass an ordinance prohibiting billboards in certain sections of a city. This is apparently a recent finding; we in this country appear to have had this authority for some considerable time, though not exercised as fully and generally as it should be.

On the subject of "Shade Trees," it has been held by three Courts of the United States that a man acquires a right in trees on adjoining private or public property, and if the trees are destroyed he suffers claimable damages. This seems to go rather farther than any rights of similar nature acquired, much less exercised, by our citizens. One could almost expect to be fully satisfied were our people only fully seized of the rights they have under The Ontario Tree Planting Act and certain clauses of The Consolidated Municipal Act, whereby they have ownership in the trees on the adjacent highways, and were they more insistent in standing up for those rights.

Your delegates were much impressed by the comparatively small attendances at the sessions of the Association, this in view of the nation wide territory and the diversity of ideas and aims covered by the Civic Association as well as of the fact that joint sessions were held with so many kindred Societies, and of the apparent interest and assistance, evidenced on the programme, on the part of prominent Chicago citizens and public bodies.

Our Association does not require to apologize much less feel ashamed over lack of attendance or of interest or of educative and helpful material to be found at any of its Conventions. To see how the other fellow does it is always useful, and your delegate, whilst regretting the paucity and meagreness of "meat" he is able to bring back, yet is most thankful for the privilege afforded him of meeting many noted and clever people with high ideals, and he trusts the future may not adjudge him as being amongst those who possibly are to be found in our Societies for what they can get out of it, rather than for what they can give. The pathways we tread in the garden of our efforts in local Societies, as well as in this Association, are unsurpassed for applying to ourselves this question, and for application of the Christian injunction, "It is more blessed to give than to receive."

REPORT OF REPRESENTATIVES TO THE ROYAL AGRICULTURAL WINTER FAIR ASSOCIATION

Your representatives attended the annual meeting of the Royal Agricultural Winter Fair Association, held on March 2nd, 1921.

At that meeting representation was given to the Gardeners and Florists Association of Ontario and the Toronto Retail Florists Club.

The delegates of these two organizations with those from the Ontario Horticultural Association constituted the Horticultural section. Three directors were selected from this section, namely one from each of the organizations represented.

The committee of Floriculture prepared a very extensive prize list of thirty-five sections, grouped in nine classes. The prizes in each section numbered five (with the exception of one in which there were six prizes). These prizes totalled over two thousand dollars and were supplemented by donations of two gold and two silver medals and a trophy by the Toronto Horticultural Society and a trophy each by the Toronto Agricultural Society and the Rose Society of Toronto.

The prizes in each instance were of the same value, i.e., the winner of the second, third, fourth and fifth prizes received the same cash premium as the first prize winner. This system of awarding prizes, while somewhat unusual, was expected to create a greater interest than the system that prevailed in other shows. It is a matter of regret that the Winter Fair was not held in 1921. The reason of this was due to the unfinished condition of the Arena.

The dispute between the directors of the Winter Fair and the City of Toronto is a long story, and nothing would be gained by detailing it here. However, this has now been happily settled, and the officers and directors of the Association are engaged in preparing for the Winter Fair to be held in November next.

The success of the Winter Fair will be greater by reason of the enthusiastic support it hopes to receive from the Ontario Horticultural Association and the individual Horticultural Societies.

Respectfully submitted,
W. J. Evans.
J. M. Pearen.
Mary Yates.

THE IRIS AND ITS CULTIVATION.

W. T. Macoun, Dominion Horticulturist, Ottawa.

It does not seem so long ago, to those of us who are getting past middle life, when all the irises we had in our garden were a very few, such as Iris pumila, the delightful fragrance of which is, to at least some of us, a glad reminder of the first spring days in the gardens of our childhood. There was also the old reliable, but beautiful Iris florentina, and the large purple-flowered Germanica. These, with Iris flavescens completed the list, as far as my memory serves. Outside of these few what other iris had we in Canadian gardens?

Now all is changed and hundreds of lovely varieties are available to make our gardens more delightful and interesting. So popular has this charming flower become that it has its own American Iris Society, with a great test garden at the New York Botanical Gardens, and several supplementary ones. Books have been written about it, the two most noted being "The Book of the Iris" (Lynch), and "The Genus Iris" (Dyke).

We who are iris enthusiasts think that there is no group of plants which affords more delight than the iris. There are more shades of colour than in most other kinds of flowers, and the light, delicate texture of the flowers, combined with their graceful form and delicate fragrance, are points much in their favor. The Greeks gave the iris a very appropriate name when they called it the "Rainbow Flower," for there must be all the colours of the rainbow in this beautiful plant. As cut flowers they are most useful, the buds opening readily indoors. They have a long blooming season, beginning almost as soon as the snow is away and continuing until the end of July. And, finally, many excellent varieties can be obtained at a low cost and will multiply very rapidly.

But it is upon the more prosaic side of the iris that I am to speak, namely that of culture, and one can say briefly that they are of very easy culture, succeeding in a great variety of soils.

For the bearded flag or German iris, a rather dry soil is desired, but they have succeeded well in both very light and very heavy soils at Ottawa. A sandy

loam soil, well drained, and well enriched, ensures perhaps the most satisfactory results. The roots of these iris are near the surface, hence a soil which will not often heave with frost is desirable, as they will become too shallow, and the clumps have to be renewed oftener than they otherwise would. The Siberian and

Cup Presented by the Palmerston Merchants to the Horticultural Society for Competition.

Japanese irises need a moist soil to be at their best, and look well by ponds or streams, but in a good garden soil one can have these succeeding well with the bearded flag iris. The bulbous irises, such as the English and Spanish, also do very well in the average garden.

In our experience irises may be planted successfully at any time from early in the spring until the ground is frozen in late autumn, but perhaps the most satisfactory time to plant the bearded flag iris is between the time they have done blooming and early autumn. If planted then, they will become well rooted before winter sets in, and there will be a good bloom in the spring. Spring is a good time to plant the Japanese iris, or they may be planted with good results in autumn also. The bulbous iris are planted in the autumn as soon as bulbs can be obtained.

The bearded flag iris should be planted quite shallow, the fleshy roots being barely covered or with not more than an inch of soil. Great losses have occurred from planting these iris with several inches of soil over the top of them, especially in damp soils, as the roots rot under these conditions. It is natural for them to have the fleshy roots close to or even on the surface of the soil where they are subjected to the summer sun and heat. Pieces of roots may lie around for weeks in the summer on the surface of the soil, which, if replanted, will soon grow. There is more danger of the iris being killed by apparent kindness than by apparent neglect. It can be readily seen that when the roots of the iris need to be exposed to the sun, which they become by this shallow planting, it is important to plant the bearded flag iris where they will be in bright sunlight most of the day. Where shaded they will not bloom well.

The bearded flag iris multiplies very rapidly and after a few seasons the centre of the clump becomes weak, and if the most and best bloom is to be obtained from the area of ground it occupies, it is necessary to divide the clump and re-plant it. The old clumps may be left for a season or two, after pieces have been taken off them, until these new clumps are large enough to ensure a good display of bloom. It is even more important to divide the clumps of Japanese iris than it is the bearded flag iris, especially when they are grown in the average garden and have none too much moisture, as the tufts or clumps soon become thick and there is apparently not that free flow of sap which is essential if there is to be free blooming, hence the clumps should be divided at least every three years. When growing along a stream or in springy places they may be left longer without dividing.

The iris has few enemies and the most serious seems to be a rot disease which, however, in over thirty years' experience at Ottawa, has given us little trouble, but which has destroyed many plants in some places. The following method of treating iris affected with this rot is employed by one of our Ottawa iris enthusiasts. The affected plant is dug up and the diseased part cut away until healthy tissue is reached. When this is done, another clean knife is used to cut off an additional thin slice, after which the roots are soaked in a two per cent. solution of formalin for a time, which should not exceed ten minutes. This two per cent., which should not be confounded with other and perhaps better known two per cent. solutions, is made up by using about two teaspoonsful of formalin to a pint of water. No doubt soaking the soil with this formalin would also be beneficial if it is necessary to re-plant in the same place. Where only a small part of the plant is affected, the disease could be cut away and then the injured part sprayed with formalin.

The leaves of iris often are spotted with disease which is most noticeable after the blooming season, but at Ottawa this has not been found to affect the blooming for the following year to any appreciable extent, and the plants are not treated for it.

The following is a list of best sixty late May and June flowering Bearded Flag Iris, Horticultural Division, Experimental Farm, Ottawa, Ont., 1921, arranged in thirteen color groups.

1. White predominating on standards and falls.
   Florentina, Mrs. H. Darwin, White Knight, Bridesmaid, Innocenza.
2. White feathered or suffused with bluish-lavender and bluish-purple.
   Ma-Mie, Madame Chereau, Mrs. G. Reuthe (Lord Seymour and Maid Marion are very similar), Fairy.
3. White, or white and purple standards and purple falls.
   Clio, Rhein Nixe, Victorine, Duc de Nemours.
4. Yellow predominating on standards and falls.
   Mrs. Sherwin Wright, Mrs. Neubronner, Flavescens.
5. Pale yellow standards and violet-purple falls.
   Princess Victoria Louise, Loreley, Darius, Gracchus.
6. Yellow standards and brownish or maroon falls.
   Iris King, Maori King, Mithras, Honourable.
7. Lavender blue and bluish-purple predominating on standards and falls.
   All pallida varieties.
   Albert Victor, Celeste, Juniata, Mary Gray, Tineæ, Imogen, Dalmatica has a very fine flower but is a shy bloomer.
8. Bluish-purple standards and bluish-purple or deep purple falls.
   Oriflamme, Amas (Macrantha), Chester Hunt, Blue Jay, Alcazar.
9. Pale purple standards and purple falls.
   Perfection, Malneri, Salvatori.
10. Purple standards and purple or dark purple falls.
    Kharput, Black Prince, Sappho (Othello is very similar), Parc de Neuilly, Archeveque, Monsignor.
11. Lilac and rose predominating on standards and falls.
    Queen of May, Coquette, Her Majesty.
12. Violet and reddish-purple predominating on standards and falls.
    Caprice, Edouard Michel, Lohengrin, Mandraliscæ, Madam Pacquitte.
13. Dusky or dull coppery standards and rich maroon falls.
    Jacquesiana (Jacquiniana), Prosper Laugier, Arnols, Red Cloud, Nibelungen.

Best Twelve Varieties.

Florentina, Mrs. H. Darwin, Ma-Mie, Perfection, Princess Victoria Louise, Iris King, Albert Victor, Alcazar, Chester Hunt, Kharput, Caprice, Jacquesiana.

Best Twenty-four Varieties.

Florentina, Mrs. H. Darwin, White Knight, Ma-Mie, Madame Chereau, Mrs. G. Reuthe, Rhein Nixe, Mrs. Sherwin Wright, Princess Victoria Louise, Iris King, Albert Victor, Celeste, Pallida Dalmitica, Juniata, Alcazar, Amas (Macrantha), Chester Hunt Perfection, Kharput, Parc de Neuilly, Black Prince, Caprice, Edouard Michel, Jacquesiana.

This list is divided up into thirteen different color groups, a grouping which was devised at Ottawa, which may not be thought suitable, but which we would like the convention to pass upon. In this list, are not included the very new sorts of Iris, because our idea is to raise the standard of the Iris in as large a number of gardens as possible in the shortest time, and that can be done by advocating the planting of the best sorts which can be obtained. To-morrow we will supply with the reports of Committee on Names and Varieties, a list of the newer Irises.

THE IRIS

Rev. G. W. Tebbs, Burlington.

The beauty of the Iris is proverbial. Its name sends us back to the rainbow and the eye, two of nature's most beautiful objects. To appreciate its rare beauty, its soft iridescence, you must gaze down into its heart. Mysterious as the opal with its ever-changing fire, its marvellous structure more wonderful

than the Orchid, so fragile as to be crushed by the slightest pressure, its beauty seems wholly ethereal, making you dream of far-away things—like the smoky clouds at dusk, or the rainbow in the glistening sun. How is it possible accurately to describe a flower of such changing hues? A little girl of ten, trying to describe the Iris, said, "I really can't tell you what color it is, but it's every kind of fairy color." If you yield to the magic spell of the Iris it will lead you across the border into a wonderland of delight, for an Iris garden is a floral world in itself, so vast that to mention all the interesting forms would be impossible, as there are about 170 distinct species, and varieties innumerable. The passage of the Iris through the spring and summer months is like that of a grand procession, the first glimpses of which may be had when the dainty Alpines and Pumilas first appear in April, closely followed by the various dwarf forms in April and May, in ever-increasing boldness of form and color, till June ushers in the great Germania family—those Bearded Irises with their broad masses of color. In quick succession come the tall Sibiricas and the still taller varieties of Aurea, Monnieri and Gigantea, until with a great burst of splendor, come the Japanese Irises, the crowning glory of all with their great blooms a foot in diameter, rising on tall stems to a height of 5 feet—the royal family, arrayed in richest blue and purple and gold—and the pageant reaches its climax. And yet, before the memory of the glory that has passed has faded away, we are reminded of that to come, when in November the Crimean Irises, yielding to the allurements of the warm Indian summer days, break into bloom here and there, as if too eager and too impatient to await the coming spring.

The Iris is the flower for the million and the millionaire—it costs little, it yields much. The following eight points are distinctly in its favor as a flower for the amateur's garden: its fragrance, its beauty, its durability, both as a flower and for its foliage, its hardiness, its profusion, the duration of its blooms, its adaptability, and its freedom from disease.

As I write this, in the month of January, the foliage of my Iris standing in the snow is as fresh and green as in June. Unlike many other perennials it will continue to grow, yielding best results without replanting for many years. It is so hardy that it asks for no protection, and it is immune from disease. And then one of its strongest points is that there is nothing easier to grow. Often in neglected gardens one sees large clumps of bloom flourishing as in the years of care; and yet, it will amply repay any attention that is given to it. It will thrive in any soil, but succeeds best in deep, rich, moist clay loam. Care must be taken in supplying it with its requirements as a gross feeder, lest the application of its food be too strong, and its growth made thereby rank and coarse. Do not use fresh manure.

In arranging the Iris garden much depends upon the taste of the owner. Along walks and drives, the borders of the shrubbery and near the waterside ideal locations may be found. The dwarf varieties make a very pretty edging to larger beds, and look most effective when planted in front of the taller kinds.

Wonderful landscape effects may be obtained by planting Irises in broad masses, around the margin of a pond, or along the banks of a stream. I was invited last summer for a day's fishing on a Trout Club's pond near my home. The pond was used for water power for a grist mill and the Club house was on a small island in the middle of the pond. The members had planted clumps of Iris all

round the island and the beauty of the Irises on the day I visited the pond was indescribable. The Japanese varieties love the water, and the Psuedo Aeoris varieties will never do as well anywhere else. A little higher the rest of the Apogons may be planted and still higher on the drier ground, the taller bearded Irises, bordering these with the Intermediate varieties, and finally the dwarf kinds, forming a carpet of color bending away into the sod. Here and there in sheltered nooks, among rocks, may be found places for the more delicate and tender varieties.

As cut flowers the Irises are invaluable. If they are taken, like the Gladioli, just as the buds are about to open and allowed to expand indoors, the colors will be much richer, and will last a long time, for as one flower fades the next bud will take its place, until all have opened.

In planting an Iris-bed or border. set the roots a foot apart. They will soon grow together. See that the soil is well drained, for in the case especially of the Tall Bearded Germanica varieties, a wet place is liable to lead to the decay of the roots. They may be planted in early spring, but the most favorable time is during August and September, the earlier the better, as that is their dormant season, after which they make a root growth, becoming established before winter. Nearly all irises may be divided and replanted successfully immediately after flowering, if the roots are not allowed to become dry. Plant deep enough to cover the roots with soil and, if planting is done in late fall, give them a slight covering of an inch of loose straw or litter merely to prevent their being heaved out of the ground by thawing. Various attempts have been made to arrive at the natural divisions among irises, but no entirely satisfactory system has yet been thought out. It may, however, be as well to give some rough outline on the main classes into which the Irises seem to fall. The first and main division is into bulbous and non-bulbous species. Each of these two main divisions falls in its turn into several sub-divisions which are again sub-divided into groups.

To take the first, the bulbous Irises, the bulb may in its resting state be a simple bulb, much like a Narcissus but without the neck of the latter, or it may possess several thick tapering fleshy roots, attached to the base of the bulb, which send out branching rootlets when growth begins again in the autumn. To the former class belong the Xiphium or Spanish Iris group, and the reticulata section. To the latter class belong the Juno Irises, most of which are of comparatively recent introduction from Central Asia. But when we come to the other main division, namely the species with rhizomatous root stocks, our difficulties immediately become greater. The differences are less clearly and easily defined. They consist in the first place of the Pogoniris group or Bearded Iris, the name being derived from the Greek word for a beard, and the Apogon species, which as the name implies *should* be beardless. Without going into further detail for the practical purposes of the amateur we may divide the Irises for our garden into three main divisions.—The Japanese, the Spanish, and the Germanica.

1. The Germanica Iris (*Pogoniris*)

They belong to the bearded class and a quantity of them in bloom is a most gorgeous sight. They are sun-lovers and delight in a warm, well drained situation where the surface-creeping rhizoines can get a good baking in summer. This is the group best known and most commonly cultivated. The flowers are the true fleur-de-lis and are called "the orchids of the garden," for they fairly outrival the orchids in delicacy of structure, and wide range of coloring, including rich yellows, soft blues, intense purples, and claret-reds, beautiful bronzes and

pure whites. They flower in May. The other species classed under this head are Amoena, Neglecta, Pallida, Plicata, Squalens, Variegata and others with their many hybrid forms and all their wonderful combinations of iridescent color. Many of them are delicately fragrant and all have prominent yellow or orange beards.

The following are a few good ones of this type:

Kharput. Standard violet—Falls violet purple.

Purple King. Full purple—very satisfactory.

Kochi—Claret-purple.

Pallida Section.

All tall, strong growers, very wide foliage, have the largest flowers of all and very sweet scented, with the fragrance of orange blossoms.

Pallida Dalmatica. Standard. fine lavender, Falls clear deep lavender. A

Iris.

superb variety for planting in masses and for cut flowers. The true variety is somewhat scarce.

Astarte. Standard rosy lilac—Falls claret red.

Glory of Hillegon. Standard, Falls clear light blue.

Her Majesty. New, Standard, lovely rose pink, Falls bright crimson tinged a darker shade.

Gueen of May. Lovely soft rose, lilac, almost pink.

Variegata Section.

The standards in this section are of various shades of yellow.

Ada. Standard—bright canary-yellow—Falls white, reticulated madder-brown.

Darius. Standard—rich canary-yellow. Falls lilac. margined white rich orange beard. One of the most distinct and beautiful.

Maori King. The most brilliant Iris in this section. Standard—rich golden yellow. Falls velvety crimson margined gold.

Honorabilis. Standard—golden, Falls rich mahogany brown,—very effective.

Amoena Section. In this section Standards are white.

Amabilis. Standard Pale lilac flushed rose-Falls velvety crimson-purple.

Frederick. Standard Pale lavender, Falls lavender barred with brown. Very free and most effective for massing.

Othello. Standard—Rich blue. Falls deep dark velvety purple, very tall and very handsome.

Ardenta. Standard—Pale lavender, Falls dark violet blue—reticulated white at claw, a combination of colour that at once draws attention.

Plicata Section.

The flowers all have a beautifully colored, frill-like margin, on a white ground.

Delicatissima. White heavily frilled with blue.

Agnes. Standard—White frilled and shaded lilac, Falls white, traced lilac at the base or claw; a beautiful variety.

Hebe. White delicately suffused soft blue.

Sappho. Standard—White frilled lilac—Falls pure white, reticulated lilac at base—large flowering—a fine variety.

Squalens Section.

The Standards are of clouded shades of copper, bronze and fawn.

Dr. Bernice. Standards coppery, bronze; Falls velvety Crimson, very large and beautiful.

Jacquesiana. Standard bright coppery crimson. Falls rich maroon; distinct and beautiful, but scarce.

Madame Blanche Pion. New, Standard—Soft bronzy yellow. Falls standing at right angles, lavender blue, with silver shaded margin.

Tall bearded Irises, Various species.

Flavescens. A delicate shade of soft yellow; large, sweet-scented flowers; fine for massing and valued for cutting in early May and June.

Albicans, Princess of Wales. A very lovely variety; absolutely pure white.

Florentina or Silver King. Creamy White, faintly flushed lavender, the blooms are quite fragrant and early in season, fine for cutting.

In the Beardless Iris Section we must note the Siberian Iris. It is the most delicate and elegant of all the small flowered Irises. Narrow, grassy foliage with tall stems and flowers of various shades of blue with white markings. They all are very free-flowering and one of the best cutting. In the *Orientalis* of this species you have an Iris of intensely brilliant blue flowers, the bud being enclosed in conspicuous crimson spathe valves. *Orientalis Snow Queen* found in Japan by Mr. Barr has large ivory-white flowers.

Irises in this section, specially suited for planting by the water side and in very damp or wet places are *Pseudo-Acorus*—the common yellow water-flag and *Versicolor*—a native species common to our streams and marshes, bearing a very showy violet-blue flower.

JAPANESE IRIS (*Iris Kæmpferi*)

The tulips and daffodils, the great Oriental poppies, the pæonies, and the roses have all come and gone, but the Iris procession is still passing, until at length the royal blue and purple of Uji-no-hotaru, the last to go, fades from our sight under the hot August sun.

Many years ago a collection of Japanese Irises, said to be a duplicate of those in the garden of the Mikado, was brought to this country. After many years of careful cultivation and study many newer varieties have come to us. The secret of success with the Japanese Iris is to keep the ground well stirred, never allowing it to bake or become hard. Any good mellow clay loam will grow Japanese Irises to perfection, if well enriched. They like lots of moisture, but flooding with water is not an absolute necessity as many claim. The Irises of this class have almost entirely Japanese names, and are fully described in the florists' catalogues. Amongst them, Yomo-no-Umi (Boundless Sea) Osho-Kun, Perfection and Lester Lovett are representatives of the class.

3. Spanish Iris.

These belong to the bulbous group and are sometimes known as the Xiphion group. If planted on mixed groups they afford highly-colored masses of flower about the middle of June. They delight in warm, rich soil, and the bulbs should be lifted occasionally when the foliage withers and separated before overcrowding occurs to diminish the size of the flowers.

In recent years a number of very fine large flowered hybrids have been introduced into cultivation from Holland.

To ensure success the bulbs must be very liberally treated with old manure, placed some inches below them, and given the warmest and most sheltered corner of the garden. Some of the better varieties are *Thunderbolt,* a very vigorous plant with flowers of a peculiar mixture of brown, yellow and purple; *Leander,* a sweet scented, yellow *Lusitanica,*—perhaps a wild species, with yellow and white flowers. I have not mentioned the English types, but they are an enlarged edition of the Xiphions. A last word:—

Because the Iris will stand any kind of treatment, and because its hold on life is tenacious and it will live on in dark, shady corners, and in herbaceous borders where according to some of its devotees no gleam of sun must be allowed to appear, don't neglect this very beautiful flower. Given good soil, fair weather and some attention and you will be abundantly rewarded;

"Iris Flower, what can you tell
Of the mysteries that dwell,
In the opal depths of your fragile shell?

Is it some Fairy whose wand has spun
Those gossamer threads with dewdrops hung,
Reflecting the glow of the morning sun?

Or is it a Spirit that dwells within,
With a message from Heaven to mortal men,
Of hope and promise at the rainbow's end?

Iris Flower, you speak to me,
Of fair and wondrous worlds that be,
In the azure depths of Infinity.

Fair messenger from out of the great Unknown,
I yield to the touch of your magic wand,
And dream and dream with you alone.

There's a gleam of the gold of Ophir,
Through the purple robes of Night,
There's a glint of the Frost King's Palace
Aglow with Aurora's light.

Iris Flower, to me you tell
All the mysteries that dwell,
In the opal depths of your fragile shell."

W. E. Saunders:—I was thinking when Mr. Macoun was reading his list of varieties how widely opinions differ about varieties. A friend of mine who is particularly fond of Iris, was asked for his favorite and he said he preferred the Isoline to all, and this type Mr. Macoun did not think it worth while to mention. I also thought Mr. Tebbs should have mentioned Histrioides and Reticulata, which bloom with the crocuses and before, and are among the most beautiful Irises we have.

KINGSVILLE GARDENS ILLUSTRATED

J. E. Brown, Kingsville.

Kingsville-on-the-Lake with its 2,000 population is the most southern town in the Dominion. It is made attractive by moist and cooling breezes, and its streets lined on either side with large maples from forty to seventy-five years old, which form a complete arch overhead. This leafy arcade, together with boulevarded streets, well kept lawns, flower beds on street corners, becomes a source of pride to the citizens themselves and creates a most favorable impression on the thousands of visitors who spend their week ends at the hotel and at their summer homes at the lake.

While the council and citizens of the town for many years planted maple trees on all new streets, and felt justly proud of these delightfully cool and shaded avenues, yet it remained for the Horticultural Society to clean up and put many unsightly places in shape before starting the cultivation of flowers. Before this civic transformation the streets looked like a diamond ring on a dirty hand.

I recognize in coming before the society that I am but an amateur in the presence of many professionals. I recognize the fact that I am addressing professors of Agricultural Colleges, representatives of Government Departments and professional florists, as well as advanced horticulturists, on a subject upon which so many splendid papers have been given at our conventions year after year. My only object in giving this paper is to give a condensed summary of the work of our society in order that it may help our amateur florists and members of new societies who are here, perhaps for the first time and upon whose efforts in their own societies responsibility for success or failure depends. I judge from the many excellent papers and addresses I have heard at our conventions that all of our new societies and many of our older ones are but in the A.B.C. class, all however, doing a wonderful work wherever organized.

I intend simply to present some of the plans which I worked out since we organized some eleven years ago, the result of which you can judge for yourselves later on, when I show the pictures. Time will only permit me to touch the high spots.

Some thirteen or fourteen years ago I got a catalogue from London, which showed a prize bed of tulips consisting of 360 bulbs. The bed was twelve feet in diameter, divided into four sections, with pink, white, yellow and red, with a red border on the outside of the bed. I ordered the bulbs and followed the instructions in planting. The following spring I had a most charming bed of tulips. These were the first tulips ever raised in Kingsville. The following fall I got more interested in the tulip family and ordered some other varieties. In looking over the

list I endeavored to see how many I could get for the dollar. Friends and neighbours were treated to some bouquets, and our church was supplied with them on Sunday morning. This commenced to create an interest in flower culture. Then a few of us got together and suggested that we form a Horticultural Society. In order to induce members to join we told them we would give them back their dollar in bulbs, shrubs, rose bushes or other flowers. We soon got our desired number of members, but did not have one member who knew anything about horticultural work. The work was very largely done by the Secretary and President.

Some eight or nine years ago I attended a Tulip Show at St. Thomas, and saw, for the first time, hundreds of different types, and I secured the names of about one hundred which I fancied. Having inhaled some of the enthusiasm that was oozing out of the tips of Dr. Bennett's fingers, I passed it on to our society and the following fall, when we got out our fall options, we inserted the selections I had made and allowed our members the privilege of selecting ten of as many types as they wished. I selected ten from my whole list and put each type in a row by itself, and when they were in full bloom in the spring, I staked each row with the name, and invited every one to come into my yard and make selections. This enabled us to get our first order direct from Holland. We also made about thirty beds on street corners, and Town Hall lawn, and at the several churches. People got so interested that orders for tulips increased by leaps and bounds. Having in a few years such an array of shades and colors, we then put on a tulip show and ran it during the war, in connection with the Ladies' Patriotic Association. We are still running it every May, and it has become the event of the season. Tulips, Hyacinths, and other flowers are labelled, and the visitors take the name of the flower that suits their fancy and place their orders accordingly. The interest created by our spring flowers, and show, during the last seven years is such that we will have some forty or fifty thousand blooms this spring of every color that can be grown in Holland. One of our members will have ninety-three varieties, ten of each, most of which are new. At one time the price had much to do with the order; now it is color and beauty that determines the choice.

In connection with our Tulip Show we have a department for all school children for best collection of wild flowers named, and most artistically arranged, for which we give about eighty prizes. This display was the feature of our show. It was the most beautiful display of wild flowers ever seen here. The competition among 500 children was very keen. If you want to create interest in your society and town, interest the children and you will have accomplished something worth while.

I would advise members of all new societies especially, if at all possible, to visit every flower show of whatever kind, where more information and ideas can be got by seeing the bloom than in any other way. In proof of this statement permit me to say that I visited the American Gladioli Show at St. Thomas last year. I revelled in those blooms for two days and selected about one hundred of the most beautiful blooms I had ever seen. My back-yard garden was too small for my enlarged visions, so I at once secured a lot, got it in shape and am installing the Skinner system of irrigation. I have put in some six or seven thousand tulips, largely Darwins, hyacinths, narcissi, lilies and other bulbs, and am arranging my list for some four thousand Gladioli. I will also cultivate sweet peas, petunias,

dahlias, asters, pæonies and roses. My trial garden is on one of our best residential streets, and every one will be welcome to come in and enjoy the sight and make selections of anything they see.

You will have observed that I have devoted my allotted time to the fall planting, but our activities do not end there. The same interest and enthusiasm is manifested in our spring work. As soon as our tulips are through blooming they are taken up, the beds are dug up and prepared for Geraniums, French Cannas, Salvias and other annuals.

Our spring options consist of different varieties of roses, shrubs, Cannas, Dahlias, Gladioli, Asters and many other flowering plants, so that flowers bloom from early spring to late fall.

Dutchman's Pipe 58 Feet Long and 10 Feet High.

The ladies of our society give prizes for the best kept lawns, making three classes, large, medium and small. The judging is done two or three times during the summer. As to the cultivation of the fall planting it is the easiest. You put in your fall bulbs after you prepare the ground. Plant four or five inches deep and four or five inches apart. Press the earth well down, cover them with some three or four inches of well rotted mulch and as soon as you can see the rows in the spring, take a narrow tooth hoe and stir up the earth between the rows so as to permit the air to penetrate the roots and your work is done. You have no insects to fight and everything is satisfactory.

For the grower of Gladioli and Roses I would refer you to the two papers given last year by Mrs. Austin on Gladioli and Mr. Moore on Roses, which are inserted in our last year's Report. Although the love of flowers came to me late in life,

nevertheless it is a joy to me that it came to me and it has helped to make this the most delightful period of my life.

The speaker here showed various slides illustrating how the people of Kingsville had beautified their homes during the last years.

THE CONTINUITY OF GARDEN BLOOM

Geo. Baldwin, Toronto.

I would first of all draw your attention to the necessity of improving the front of your premises, by putting in a small flower bed, in centre of front lawn, erect trellises for vines and creepers on the verandah, and place a shrub or two on each side of entrance. Then turn your attention to the back garden, and improve the appearance of it by putting up one or two bowers or archways for climbing roses, similar to the slides just shown.

Now as to continuity of bloom, you have often gone into a garden and exclaimed "What a beautiful garden;" and perhaps if you had gone into that same garden again, in a month's time, you will find that there is very little bloom to be seen, simply because the matter of continuity or rotation has not been considered. In the short space of time allotted to me I will endeavor to give you the best varieties of flowers from which I get my continuity of bloom. Start off in the fall, October for preference, and plant Tulips, Cottage, Darwins and Doubles, the same with Hyacinths in color, also Narcissi and Daffodils, with a sprinkling of Crocus, Snowdrops etc., to be followed by the Flag Iris in colors, and Pæonies. And now the Lily family helps us in this continuity, and in this direction, are, to my mind, in a class by themselves, because if you have enough of them, you can get the continuity from them alone, by having the following: Tenuifolium or Scarlet Turk's Cap; Candidum or Madonna Lily; Croceum, the real Belfast Orange Lily; Wallacei similar to Croceum only smaller; single and double Tigrinum, then that splendid lemon yellow Henryi, the hardiest of them all; then the beautiful white Testacium, and the early Speciosum, Rubrum, Roseum, and Album planted in the fall, and which are followed by the Auratums, Platyphylum and Vitatum, and wind up with late Speciosum, Rubrum, Roseum, Album, which are planted in the spring, this will bring you up to the third or fourth week of September. Now for flowers that will give us bloom from the Pæony period, till frost comes, the following will fill the bill. Rudbeckia, Fulgens or Black-eyed Susan, Newmanii, an improvement on the former, and Echinacea or purple cone flower. Study the catalogues for early, midseason and late blooming Perennial Phlox starting off with that pure white Miss Lingard, which blooms in June, to be followed by others in variety, and here the roses begin to hold sway, and I prefer to mix them in the perennial border. Dephiniums will give us a second crop of bloom, if cut off early. And now the Helianthus, Miss Melhuish, Daniel Dewar, Rigidus and Orgyalis, Helenium Riverton Gem and Riverton Beauty, Chrysanthea Uliginosum, and wind up with Botonias and Perennial Asters.

The Annuals must not be forgotten, and have a good supply of Asters, Zinnias, Phlox Drummondi, Verbena, etc., and let me here say a few words for one of the Queen of Flowers, the Gladiolus, recommending the following as having given me excellent results, from cutting point of view. America, pink; Catharina light blue;

Empress of India reddish brown; Goliath violet; Glory of Holland white; Halley salmon; Liebesieuer scarlet; Marechal Foch rose; Master Wietse violet; Mrs. Frank Pendleton rose; Prince of Wales salmon; Red Emperor early red; War Scarlet; Peace white; White Giant; and last but not least, Lady Borden, one that we all ought to feel proud of, on account of its being raised by one of our esteemed members, Alexander Gilchrist. Time will not permit me to go more fully into details, and for cultural directions, but let me say cultivate freely and often, water copiously in dry weather but with the nozzle off, and keep a garden diary for dates of blooming, and for best varieties.

W. A. McLean: Some few years ago, sitting on the veranda, a little girl was playing among the flowers nearby, I said: "Do you like flowers?" And she said: "Yes, I do, they make me feel so happy." It seems to me that is a very truthful, frank, childish description of flowers—they make us all happy. And it is the function of your organization, in its influence upon the tree planting situation of this Province, in landscape gardening, and in the growing of shrubs and flowers, to make yourselves and others happy. The speaker then told of the work being done in the building of better roads, and said:

"We are sometimes accused of slaughtering the trees on our highways. Emphatically that is untrue, and is not the case. There are instances where we have cut trees on our highways, but the instructions which our engineers closely adhere to are that no trees are to be cut which do not stand in the way of essential construction. We deviate the lines of our construction in order to escape the necessity of cutting down our old trees. No one knows more than I do that the axe can destroy in a few minutes what has taken a hundred years to grow. That is impressed upon our men in all parts of our construction. Not only so, but we are adding to the tree growth of our highways. During the past two years we have planted on our highways 20,000 trees. These will be a pride to us, I believe, for many years to come. And we expect to go on with that work under the direction of our Highway Forester, an expert who is attached to our Highway Department and who will speak to you this evening, and show you more fully what we are doing.

W. W. Gammage: It affords me a great deal of pleasure to be present with you here this evening, to bring you greetings from the gardeners and florists of Canada. We have no statistics as to how many gardeners and florists we have in Canada, but, taking a comparison from the United States, it costs the florists of the United States, when coal is at a normal price, $25,600,000 for heating their greenhouses. It costs $78,000,000 to pay their employees, and they have more invested in land and glass and plants than the steel industtry of the United States. Taking a comparison, therefore, between that country and this we may say that the florists and gardeners of Canada have a very large investment, and as a financial and commercial enterprise it is of no small account in our fair Dominion.

For some years we have been trying to educate the people of Canada to the fact that Canada lacks educational facilities at its Universities and its colleges whereby young men and young women wishing to engage in Horticulture can obtain the education they require. Recognizing this, a number of the States in the Union have founded departments at their Universities where they are teaching that. and it is taught to a very large extent and has become one of the leading features at such Universities as Cornell, Illinois, Ohio, Wisconsin and one or two of the other States.

I was very glad to notice in your Annual Report that you have also taken this educational need into consideration, that the resolution which we passed some three years ago has been adopted by this organization, and we hope for your co-operation, that when this Council of Horticulture is formed, which is now being promoted by the Department of Agriculture at Ottawa, this Association will fall in and lend its assistance, so that our young men and young women may have an opportunity to get their education in Canada.

Such meetings as you have here must be a great help to you. It must be a great help to your communities and to the country at large, for where we have pleasant and beautiful home surroundings, it gives a better tone, it gives to the people a satisfaction that they cannot obtain in other ways. You will notice that it is in the bigger cities, where there is a large foreign population, where labor troubles start, but in the smaller cities where the laboring people own their own homes and have pleasant home surroundings they have other and worth while occupations which take their minds away from their so-called troubles, and therefore we have a happier and a brighter and more congenial community in which to live.

Prof. Thompson made a plea for sympathetic support in forwarding the work of the proposed Botanical Garden.

Prof. Thompson: The project was practically a standing thing at the present time, perhaps one reason being that money is not moving very freely at the present time, and it was considered advisable to just hold their own for the time being and wait until times would improve.

Prof. Wade congratulated the Association on the good work done by its convention and its officials.

Harry Ryrie brought greetings from the Alumni Association of the Ontario Agricultural College.

W. J. Connolly, President of the Fall Fairs Association, said he could not help but be pleased when he came and spent a few hours with the Convention this afternoon, and saw the splendid work they were doing. "As I came here this afternoon, and as I saw the beautiful pictures on the screen and the work you were doing, and as I looked over the crowd you had here and the members equally divided as to sex, I felt that the ladies were coming to the place that God intended them to have from the beginning of the world, although it has taken a good deal of courage for a woman to come to her place and mingle with men."

J. Lockie Wilson: We have here a gathering of some four hundred ladies and gentlemen from Fort William to Glengarry, not for the purpose of financial gain, not for the purpose of selfish good, but for the good that they can do to others without hope of financial reward. You are here to promote the interests of the home, in making Ontario the brightest gem in the Crown.

I am glad that our organization is going forward. We are seventeen years old, and the institution that Mr. Connelly represents is much older. It is 157 years since the first fair was held in Canada. Seventeen years ago you organized this great institution with a few hundred members. To-day that army is growing, and every year your conventions are becoming larger and the enthusiasm is spreading East and West and North and South, until to-day you have a great army of flower growers and lovers, that is trying to have our homes decorated

with plants and shrubs and vines and trees of all kinds, trying to make Ontario more beautiful, and as has been well stated here, you cannot do very much talking about beautifying if you don't see that your own homes are made beautiful.

It was stated here this afternoon that our Ontario Agricultural College is not doing what it should do along the lines on which we are working. Even in the University of Toronto, the largest under the Flag, the surroundings are not very beautiful horticulturally. Go over there any time in summer and you will come away feeling there is something wrong, so far as horticulture is concerned. We want those grounds beautified, and students going home to their professions in the towns, cities and country sides of the land will be inspired by the surroundings of their College, by the trees and shrubs which will meet their eyes daily. True, it is necessary to have the campus clear, but the rest of the grounds should contain a high order of beauty from the horticultural point of view.

I am here to commend you on the great work you are doing, and I congratulate the institution on having such a live organization as the Toronto Horticultural Societies, the members of which are always ready to assist in every possible way. The floral decorations that are in evidence here have been supplied by the Toronto Horticultural Society. And not only Toronto, take the little village of Thornhill, it has done its work. Miss Simpson, the secretary of that Society, has done splendid work, not only for her own Society but for the City of Toronto as well.

"Though boasting no baronial piles,
Nor ivy-crested towers,
What past can match thy glorious youth
Fair Canada of ours?"

Prof. Mavor, Toronto University, said that the best example of renewed municipal interest in France was the city of Montpelier. It was a great school of botany, for a great many years even before botany became a scientific subject; then it took almost the first place in the schools. Montpelier had its agricultural society, and it was an integral part of the revival of the municipal spirit and interest and enthusiasm for the community. About forty years ago I was in the north of France and the depression of the municipalities was quite marked. Things were in ruin, the ancient gates of the fortified cities were tumbling down, and nobody had any interest in restoration. Many of the cities were sombre and dismal. About fifteen years later I went to the same cities, and I was perfectly astounded at the tremendous alteration which had taken place. The old cities had assumed or taken on a different aspect. It was particularly noticeable in Noyon. I asked for the reason of this, and they said it was the Horticultural Society. It was the very definite and positive association of the growth of interest in flowers and the altruistic, which wrought this change in France. I took the example of France, because there the centralizing principle had been carried to an extreme degree, and even where this centralizing spirit was so strong, the cultivation of love of flowers and the consequent inculcation of the municipal spirit wrought the desired change.

In the Scotch towns and villages and in many of the English ones you have the same experience. The Flower Show is the great event of the year. and everybody attends it. At the Flower Show the peer and the farm laborer rub shoulders. It is always of the utmost interest. Not long ago I was in South Wales where a

flower show was attended by everybody in the whole country. A very fine display it was, and very interesting to see all the countryside collected together and taking an interest in the same thing, taking part in the competitions with one another.

Perennial Border in Foreground, C.E.F.

W. B. Roadhouse, Deputy Minister of Agriculture: It is perhaps only fitting that this gathering should be graced to-night by the attendance of so many ladies, because, after all, their interest in their work has much to do with the position which horticulture has attained in this province and the success which it will attain in the future. It is also fitting that this year the presidency of this Association should be graced by a lady. Many of you possibly witnessed, as I did, last September at the Toronto National Exhibition, the splendid exhibit of flowers of various kinds, changed from day to day, and kept ever fresh. It was a common everyday scene to see your president among the flowers with her sleeves rolled up and doing the regular manual work which it was necessary for someone to do to keep that display fresh and creditable to this Association and to the Horticultural interests of that province. Then when we compare with that scene, which demonstrated manual labor and expert knowledge, the grace and dignity which is brought to the presiding table of this function, you will realize, I am sure, the all-round qualifications which your president possesses for the position which she has filled. It was indeed a happy idea which resulted in this gathering being graced by the presence of representatives of other allied interests and associations. We welcome them all.

It is not my intention to take up any great length of time to-night but there was one matter which I thought I might mention which holds a certain amount of interest at this time. Various speakers have made suggestions as to your work, and there was a matter which came to my notice a few days ago which it seemed to me would be at least a matter of interest. if not a matter of action, and

that is the question of the adoption of a floral emblem for the province of Ontario. This is not a new matter, it has received attention in years gone by, and I can realize the difficulty in coming to any definite conclusion on a matter on which there is such a variety of interest, but it seemed to me that you might be interested to know of the steps which have been taken by other countries, and particularly by the States across the line. It is unnecessary to remind you of the national floral emblems if we may so call the thistle of Scotland, the leek of Wales, the rose of England, and the lily of France, which more closely correspond with the maple leaf of Canada, but when we look over the record as it applies to the States, across the line, we find that in each State, with the exception of Pennsylvania, South Carolina, Missouri and Tennessee, a definite official floral emblem has been adopted, and this is the distribution which has been made, according to the record which came to me:

NATIONAL AND STATE FLORAL EMBLEMS.

Thistle, ... Scotland	Magnolia, .. Louisiana and Mississippi
Shamrock, ... Ireland	Sagebrush, ... Nevada
Leek, ... Wales	Cactus, ... New Mexico
Rose, ... England	Mistletoe, ... Oklahoma
Lily, ... France	Red Clover, ... Vermont
Tulip, ... Holland	Indian Paintbrush ..... Wyoming
Sunflower, ... Kansas	Violet, Illinois, New Jersey, Rhode Island, Wisconsin
Pine Tree, ... Maine	
Dogwood, ... Virginia	Rose, ... New York
Black-Eyed Susan, ... Maryland	Cherokee Rose, ... Georgia
Rhododendron, ... West Virginia and Washington	Wild Rose, ... Iowa
	Wild Prairie Rose, ... North Dakota
Daisy, ... North Carolina	Columbine, ... Colorado
Peach Blossom, ... Delaware	Syringa, ... Idaho
Golden Rod, ... Alabama and Nebraska	Trumpet Vine, ... Kentucky
Mountain Laurel, ... Connecticut	Mayflower, ... Massachusetts
Apple Blossom, Arkansas and Michigan	Bitter Root ..... Montana
Orange Blossom, ... Florida	Purple Lilacs ..... New Hampshire
Golden Poppy, ... California	Red Carnation, ... Ohio
Carnation, ... Indiana	

All the States have chosen State flowers excepting Pennsylvania, South Carolina, Missouri and Tennessee.

You will see the wide range of choice covering the broad area to the south of the boundary line, and I submit that information to you for what interest it may have.

In conclusion I believe that the success of the individual Horticultural Societies and this Provincial Horticultural Association, is based upon the fact that the Horticultural idea is a constructive one. It seeks to make things better than we found them. It seeks to bring brightness and beauty where before there has been only waste and decay, and so long as we keep to that idea, and the ideal before us, we will not only find great scope for useful work but I think we will find support and encouragement for all quarters and all interests in this province. I thank you.

SOME HARDY FLOWERING TREES OF THE NORTH TEMPERATE ZONE.

Jno. Dunbar, Assistant Superintendent of Parks, Rochester, N.Y.

In the embellishment of woodlands in parks, cemeteries and private estates, what are known in gardening language as "Ornamental Flowering Trees" should receive a large degree of attention. Of course, as a matter of fact, all trees have their flowers. Oaks, hickories, beeches, hornbeams, elms and birches all have interesting blossoms, but they are more or less inconspicuous, and never attract attention from the ordinary observer. There are numerous hardy trees, however, whose flowers are very showy and when they are used extensively in plantations and woodlands, or placed individually on the borders of lawns and meadows, they produce a particularly pleasing and noticeable effect, and attract the attention of the most indifferent.

It is very important to use such trees largely in park plantations, private estates and cemetery areas. The inspiration derived from the branches of many flowering trees, wreathed in showy blossoms, has consciously and unconsciously an elevating effect upon the minds of the spectators.

Attention is first called to our native Shade-trees or Juneberries (Amelanchiers). They are native in our woods, but in some areas they are much more abundant than in others. I have seen them in Northern Ontario. They are usually in bloom with us about the first week in May. The slender branches, thickly covered with myriads of white blossoms, are very showy, and when they are abundant as they are on the banks of the gorge of the Genesee River north of Rochester, it is a sight worth going a long distance to see. We have raised seedlings and planted them in thousands in our parks at Rochester, N.Y.

American hawthorns have come into prominence, at least botanically, during the past 20 years. Many of them are handsome round-headed trees, but the great majority are arborescent shrubs or shrubby in habit. Many of them are very attractive with their white blossoms at the end of May or first of June, and the crimson, scarlet, orange red and orange yellow fruits in late summer, autumm and late autumn are particularly attractive. In fact I do not know of any other ornamental fruits that can surpass our native American hawthorns at these seasons. I studied and collected the native hawthorns a number of years since around Chippawa, London, Toronto, Belleville, Kingston, Gananoque, Prescott, and Ottawa, and in that area there were perhaps 100 species of those beautiful ornamental hawthorns, and the great majority of them are suitable for planting in ornamental grounds. They prefer to grow in heavy lime-stone soil. Perhaps some of the most distinct in Ontario are Cratægus audita, C. Ellwangeriana, C. Macounii, C. flabellata, C. Champlainensis, C. pedicillata, C. delectabilis, C. fulgida, C. ferentaria, C. virilis, C. rotundifolia, and C. venulosa.

The different species of ornamental crab-apples are charming when in bloom. It takes a good many years, perhaps fifteen to twenty years, to obtain a good round-headed Crab-apple, but such a tree with the branches wreathed in carmine, rose-tinted, blush or white blossoms is indeed remarkably beautiful. China, Japan and Siberia have given us a large number of remarkable hardihood. Malus

floribunda, M. atrosanguinea, M. spectabilis, M. prunifolia var. rinki, M. Sieboldii, M. Zumi, M. Sargentii; with hybrids and varieties amongst these species are all lovely flowering objects from eastern and north eastern Asia.

The native American crab-apples, commonly known as "Garland Trees," are handsome and fragrant when in bloom. Two of these (Malus coronarius and M. glaucescens) grow in Western New York and in southern Ontario, how far north in Ontario they are native, I am not sure. I saw them growing in the Arboretum at Ottawa, and doing well. The Western Crab-apple Malus ioensis, and the double flowering form of this, known as the Bechel Crab, are excellent hardy flowering trees. Botanists during recent years have discovered other new species of American crab-apples namely—Malus lancifolia, M. glabrata, M. platycarpa, and M. bracteata. The Asiatic Crab-apples do not come true to seed and should be either budded or grafted. The American species come true to seed.

The Red-Bud; Cercis Canadensis, sometimes known as Judas Tree, produces a beautiful effect about the middle of May. The branches covered with myriads of pea-like blossoms in pale-red or rose-color, produce an indescribably beautiful effect when contrasted against coniferous evergreens. There is a pure white form of this, which is quite rare, and which we are propagating for our own use in our parks. In a wild state the Red-Bud does not grow north of southern Pennsylvania, but it is quite hardy at Rochester, and I suppose it would be all right from southern to central Ontario. The Red-Bud should be rigorously confined to one stem by pruning when young. If left unpruned it will divide into a number of stems, and is very liable to be smashed in windstorms.

The Silver Bell or Snowdrop Tree, Halesia monticola, is perhaps the most dignified and beautiful flowering tree of North America, and although found in a wild state from North Carolina to Georgia is perfectly hardy at Rochester, and has not suffered during the past twenty-eight years. The large pure white bell-shaped blossoms, occasionally pink, are very attractive. Halesia Carolina is a lower growing form which very rarely grows into one main stem, and has smaller flowers than the former, and has about the same degree of hardihood. We have a number of Halesias growing on a slope in Durand-Eastman Park, Rochester, N.Y. exposed to the cold north west winds blowing off Lake Ontario, and they are quite happy. I therefore think they ought to be satisfactory from Southern to Central Ontario.

The White Flowering Dogwood. Cornus florida, as a choice North American flowering tree. stands in the front rank. In very severe winters the flower buds do get injured, and their beauty is correspondingly marred. In seasons, however, when flowering abundantly there is no more beautiful sight when copses, plantations and woodlands are adorned with hundreds of it in full bloom. The White-flowering Dogwood is native in southern Ontario, but how far north it extends in Ontario in a wild state I do not know. The variety of the White-flowering Dogwood known as rubra with pink red involucres is a remarkably beautiful object when a well grown plant is in full bloom. The Kousan Dogwood, Cornus Kousa, from Japan bears a resemblance to our White-flowering Dogwood, in its large white involucres. It flowers one month later and does splendidly at Rochester.

Very little attention has been paid to our native American plums. The Black Plum, Prunus nigra, which is a common arborescent bush or small tree in northern Ontario, is a beautiful object in bloom and it is usually in flower about the end of May or first of June. The American Plum, P. Americana; Allegheny

Plum, P. Allegheniensis; the Wild Goose Plum, P. hortulana; Munson Plum, P. Munsoniana; Beach Plum, P. maritima, are all highly decorative in bloom and are worthy of a place in any ornamental grounds.

The White Fringe, Chionanthus Virginica, is a beautiful American small tree native from Pennsylvania to Texas. The long drooping white flower clusters are very attractive. It is quite hardy at Rochester. It is slow growing.

There are many beautiful flowering Cherries. The small fruited Cherry from Northern China, Prunus tomentosa, is a very handsome object in bloom. It usually flowers about May 1st. and every branch is covered with myriads of white blossoms, tinged pink. It usually forms a broad-headed arborescent bush much broader than high. Mr. Ormiston Roy tells me it is quite hardy at Montreal. Sargent's Cherry, Prunus serrulata variety Sachalinensis, is perhaps one of the most important flowering trees introduced from Japan. The large rose-tinted

Asters.

flowers are usually one and one-half inches across and are very conspicuous. Prunus subhirtella and the variety pendula are beautiful Japanese Cherries with conspicuous pink-red blossoms and quite hardy. There is a showy bird Cherry that has been lately called "The Russian May Day Cherry"; Prunus padus variety commutata; from North Eastern Asia. It is the earliest of all trees to come into leaf in spring. It produces long pendulous racemes of snowy white flowers, and is a beautiful object in bloom. It seems to be of iron-clad hardiness.

We are much pleased with a small tree lately introduced from Korea and Northern China known botanically as Evodia Daniellii. It produces large clusters of white flowers about the first of August and it is quite hardy.

Styrax Japonica is a small Japanese tree that grows to a height of 20 to 25 feet, and has white bell shaped flowers in June. It is quite hardy at Rochester.

Pterostyrax hispida from Japan is another closely related flowering tree to the former, and has long drooping clusters and white blossoms in June. It is not quite as hardy as the former.

The Golden Chain, Laburnum vulgare from South Europe, with its long clusters of yellow blossoms always attracts attention when in bloom. It is quite hardy at Rochester and is probably hardy in southern Ontario.

We must not omit the red flowering horse-chestnuts. Aesculus carnea; A. carnea Briotii; and A. carnea Plantierensis with variously red colored flowers are highly ornamental. A low growing species lately introduced from southern Missouri, A. discolor variety mollis, has beautiful red flowers and has proven to be quite hardy.

I suppose in ornamental flowering trees China and Japan have contributed nothing more beautiful than Magnolias. The hybrids which were developed many years since from two Chinese species and known as Chinese hybrid Magnolias, are gems of the first water. In all parts of North America wherever they prove to be hardy, it is indeed a fortunate circumstance to be able to enjoy such beautiful floral objects.

If these Magnolias had never been introduced from Asia what a serious floral blank it would have caused in our parks and gardens to-day. All of the Chinese hybrid Magnolias do splendidly in Rochester and a number of American and Asiatic species also do well. In Oxford St., Rochester, a space 2200 feet in length is entirely devoted to Magnolias. On the particular Sunday when they are in bloom crowds of people go especially to see them. The following hybrids do well with us; Alexandrina, alba superba, Andre Leroy, Brozzoni, Lennei, Norbertiana, Rustica flore rubra, Soulangeana, Soulangeana nigra, speciosa, and Verbanica. The Japanese species stellata, hypoleuca, parviflora, salicifolia, Kobus and the Chinese Denudata are all hardy with us. There are also four American species; acuminata (native in Western New York), Fraseri, Glauca, macrophylla, and tripetala that are very satisfactory with us. I do not know what success has been made in growing Magnolias in southern Ontario but it seems that the Chinese hybrid Magnolias should succeed in sheltered situations in southern Ontario.

BIRD FRIENDS AND ENEMIES OF THE GARDEN.

W. E. Saunders, London.

There has been so much talk here to-day about the part that women are taking in the world to-day, that I thought that although I had definitely intended to leave out all mention of the birds who took time by the forelock years ago, yet under the circumstances I felt perhaps I ought to refer to them, just to give you ladies an idea that perhaps, after all, you are not so very far in the forefront in social matters as you thought you were.

I had intended to omit all mention of those birds of which I have no specimens with me, but certain little birds live in the West in Alberta and Saskatchewan, and they nest every summer. There are two species of them, the Crimson Phalarope—they are birds about the size of that black Cuckoo, long legs, long bills, and a good many years in advance of the human race's progress in the feminine world

which only came about 100 years ago. As a general rule the male birds wear the bright plumage and the female is protectively colored so that she may not be captured by a predatory bird or animal but may live to rear the brood. The female phalarope wears the bright colors, the male is a dull colored bird. Knowing that usually the female is dull colored, we might infer the whole life history of the phalarope, with just a little imagination. You know the agitation of the women among the human species started about 100 years ago. About ten, fifty or one hundred thousand years ago the phalarope had that subject up for discussion and they compromised in the way that we have compromised, that is to say by giving her everything that she asked for, and she asked for everything. She did not stop where you stopped.

You know the first thing that happens in spring when the birds arrive on their nesting ground is the courtship, and while she was taking over the other duties of the male she took that over too, and so the first thing you see in the spring is to see three or four very handsome females charging around for the dullest looking little male you ever saw, to accompany them for the summer. And as soon as she gets him she puts him to work. When the eggs are laid her duties are through, and if you meet a little company of phalaropes on the prairies of Saskatchewan and Alberta you may know they belong to the Suffragettes—they are the Women's Canadian Club or Women's Horticultural Society—and I think it is a fair guess that they are discussing the shortcomings of their neighbors as well as the prevailing fashions in feathers, etc.

I would like to ask the ladies how much in advance of the times they thought they were, when they are thousands of years behind the phalarope, and they have not yet adopted the first phase of up-to-dateness, they have not yet started to do their courting!

I do not need to argue with you that birds are good friends to have in the garden. Some people who value their cherries do at times think that they have too many robins, and perhaps they include a lot of other species that do not do harm to you. I do not deny that robins are fond of cherries, but outside of a little damage to the cherries and small fruits, it may be taken for granted that every one in the room is interested in birds and believe that they are useful to Horticulture, and, having taken that for granted, I would like to speak about a few species that are strictly injurious. I do not like to use that word "injurious." The Creator has put here in Ontario birds that we in a general way ought to leave alone, but I think there are limitations. Some birds have increased very much owing to the protection that we have given them. They have taken full advantage of that protection, and it has suited them, and they have gone ahead and multiplied, and they are a menace to some other species, and that being the case it is up to us to make an end to these in so far as we can. For instance, this big blackbird, the bronze crackle. I put him in the same category as the blue jay. Both of those birds eat at every opportunity the fledgelings in the nest, and every egg they can get. If they were particular like us and demanded that their eggs be fresh they would not eat so many, but they are not. Birds have no prejudices. So long as an egg has not something inside that will blow up when he breaks it, he is willing to eat it, and these two birds are a menace to the small birds and bird lovers, and a horticulturist cannot afford to have very many of these around his place. You may imagine sometimes, if you have some blackbirds, for instance, that you could not get rid of them. You have to kill them.

The English sparrow is a very common bird. They come in my own backyard sometimes, and I have devised a trap for them—just a box with a wire netting, and it is stuck up on a stick, and from that stick a string leads to a living room window. The English sparrow feeds on the millet seed I keep under that box continually. There is always food and safety there for the native bird. The English sparrow however does not find quite that experience. They find food but not safety, because sometimes I pull the string and down comes the box. I take them out and throw them up against the fence, and they have a short and painless end. Now the point that I want to make is this: I catch in my garden each year in the spring perhaps 20 or 30 English sparrows. There are English sparrows all through the rest of our block, but our garden is remarkably free from them. But birds, like human beings, have habits, and some English sparrows will get the habit of coming to my backyard, and when they come and they find the native birds feeding freely under this trap, then the English sparrows take up the cry: "Here is lots of food, let's get it." The result is that every sparrow that comes to my place gets this habit and is soon dead. You would be amazed that in a city full of them you could free your yard of these pests. Apply that idea to the blue jays and the crackle. When you get rid of these birds your small birds are pretty safe, particularly if you get rid of the red squirrel which you probably do not have, and tackling a far bigger job, the elimination of the cat. I was surprised when I raised the question of the cat and found that the cat had many defenders in Horticultural Societies. If you know anything at all about the habits of the cat, you will know that she does not play fair. The laws say to me: If you go and shoot a robin, you may be taken to the police court and fined, but you may keep six cats, and every one of these cats can kill six robins a day. Why should it be legal to allow a cat to do things, which I am fined if I do! People say you must have them to destroy mice and rats. Jack Miner does not have them, and he does not have mice and rats, but he keeps traps. If you are a cat owner you do not know what your cat does. If you are a cat owner, let me ask you to get converted from the error of your ways.

There is another bird that is a serious menace to Horticulture and to our welfare in general to-day, and that is the male and female cowbird, on account of laying eggs in other birds' nests. You know that bird chooses the nests of little bits of birds, such as the yellow warbler. When the young cowbird comes out of the egg, it is a bigger bird than the others, and it yells the loudest for grub and it gets nearly all the food, and it grows the fastest, and the faster it grows the bigger its mouth becomes, and the more demands it makes for food; and, as a result, the young warblers die of starvation, so that you see these cowbirds cost us a price. Every cowbird we have has cost us a price in the way of depriving us of small insectivorous birds of about two or three small birds per cowbird. Now these two or three small birds are worth more to us than one cowbird. In the old days the cowbird was not so numerous in the forests, as it is a plain bird. Consequently in the spring time, if I have a gun with me—which I don't very often carry—and I have an opportunity to shoot a female cowbird, I feel I have done a very virtuous act.

The birds that come to our gardens are all of them I think interesting to the horticulturist, and most horticulturists are fairly interested in bird life, but complain of not being able to identify the birds. There are the Bird Guides, and if you realize that the most enjoyable hours that you can put in are

those that you spend in learning the birds. So I propose to try and help you identify some of these insect eaters, and very briefly, these are some of their characteristics:

When I was in Europe the cuckoo was the only bird that anyone offered me any assistance in identifying. As it flew up in the air it said "Cuckoo," "Cuckoo," and a farmer said to me: "That is a Cuckoo." Now our cuckoo does not say that, but he has a voice something like the European cuckoo. They are almost the most omnivorous birds, as far as insects are concerned, that we have. Most birds object to hairy caterpillars. The cuckoo is not one of them.

The mocking bird. This family is represented in Canada by the mocking bird which occurs only sporadically in the south-west. I have only seen one in Belle River. Two or three have been taken at Point Pelee. The man who brought them down got a good lecture, and now I can assure you they do not shoot that bird any more.

Besides the mocking bird, in the mocking bird family, are the brown thrasher and the catbird. If you can have either one of those birds in the garden, they are most delightful singers and most persistent insect eaters. The catbirds sing to you in the night. Some people do not like their rest disturbed. I do not think many people would raise objections to listening to the catbird singing at night, he has such a lovely, whispering song. The catbird sings as though he had words to all his song.

Somebody to-day spoke of the purple martin. This is the tree swallow. It nests in artificial houses that you may put up for him and which he may accept and nest in. It is a very sweet bird, and is a glorious swallow with a musical note in his tone.

All of these birds of the air, of course, eat nothing but insects and are absolutely beneficial from every standpoint.

Then we have in the gardens the warblers. Here we have three of them. The central one is the black throated, blue warbler, and the yellow warbler, and the last is the common one of the gardens. We have about 30 species of warblers, and twenty of them are available to you for companionship and joy. If you have a garden with a few trees therein, you will have probably twenty species of warblers coming to you. Every one of those little birds feeds on nothing but insects, and so they are all beneficial in the highest degree.

When I was speaking about swallows I meant to have referred to the eave swallow which nests under the eaves of the farmers' barns and which has been banished by the English sparrow.

The vireos. I have here two specimens of vireo, the red-eyed fellow and the warbling vireo. Their songs will identify them, and their motions will identify them as vireos. You can tell the warblers by their slowness in action, while the vireo is quick in movement.

The Scarlet Tanager has much the action of the vireo, and I have been deceived by it.

TREASURER'S REPORT

The Treasurer then presented his statement which appears on page six.

Mr. Hesson stated that what applied in the way of finance in the beginning of this Association, with about 6,000 membership, necessarily does not apply to

a membership of 32,000. The number of societies included in the last yearly report of the department as having received grants numbers 116. 114 are listed as having been alive and two as not making returns, leaving 114 societies from which we might necessarily expect to derive affiliation fees. Of this 114 there are twelve that had not affiliated at the time I went through the books recently. If all these societies affiliated and paid the consequent fee, all the revenue we would derive would be $335. We have an addition this year of some 25 societies, and I am glad to say that these new societies coming in are imbued with the idea that it is compulsory for them to affiliate. Working along the basis that we are and have been for some time we cannot expect that $335 a year would be very materially increased within a reasonable period. It seems to me we have come to a time when we must give very serious consideration to this question. Our Convention expenses are necessarily increasing. The importance of our work is necessarily increasing; therefore, we must have the sinews of war with which to carry on, and as far as I can see it, those sinews are not to be obtained under our present system. You will, however, before the session is over, have submitted to you a proposition bearing on this matter, and I want to bespeak for that resolution your very serious consideration and, I hope, approval. That means, we expect, will put us in a very much favorable position financially and eliminate some of the difficulties which our local societies are to-day under, arising from the fact that secretaries and officers of the local societies are at sea as to this matter of affiliation and the amount of fees payable to this Association.

Mr. Hesson then moved that the Treasurer's report be adopted. Dr. Smith, of St. Catharines, seconded the matter and it was carried.

REPORT OF THE COMMITTEE ON NAMES AND VARIETIES.

Last year this committee in its report summarized the work of the committee since its organization, and gave a list of the subjects dealt with in all previous annual reports.

Several changes were made in the personnel of the committee last year, and it now consists of Mr. W. T. Macoun, chairman, Miss Mary Yates, Miss M. E. Blacklock, Prof. H. L. Hutt, Mr. W. E. Saunders, Prof. Thomson, and Miss I. Preston, secretary. Nearly all the members of the committee have made some contribution to the present report.

The growing need of having a committee or committees with some Canadian organization at the back of them to pass on new varieties of horticultural plants of Canadian origin has been felt this year more than ever before, and it is hoped that something can be done at this meeting of the Ontario Horticultural Association to strengthen the action of the Canadian Florists' and Gardener's Association, which has already made arrangements for the registration of Canadian novelties, and has appointed committees to pass judgment upon them. The Canadian Florists' and Gardeners' Association, however, is a body of commercial men and women who naturally see things from a dollars and cents standpoint first, but it is felt by the Names and Varieties Committee of the Ontario Horticultural Association that amateurs as well as professionals should be on the committees so as to insure a variety being judged on its artistic, as well as on its commercial

merits. It would seem to be desirable to have someone on each of the committees on ornamental plants who is recognized as an artist, as well as a horticulturist. Owing to the great distances in Canada, too much care cannot be taken in the appointment of committees, and a large committee for each section of plants seems desirable in order that there may be a sufficient number of experts fairly near together to pass judgment on novelties. It should be arranged that no part of the large committee could make awards unless professionals and amateurs were equally represented when judgment was passed on a new variety. It might be desirable to have novelties shown at certain exhibitions at which the committees could be present.

The following information in regard to the registration of novelties which has been adopted by the Canadian Gardeners' and Florists' Association may be given here. This is from the report presented by the Plant Registration Bureau at the 1921 Convention of the Canadian Gardeners' and Florists' Association.

"During the year 1920-21 considerably more progress has been made in plant registration in Canada than in any previous year. The necessary application forms were printed and are now ready for distribution to all users or introducers of new or novel plants, either in Canada or elsewhere, the rules of the Plant Registration Bureau being printed on the reverse side of the form. A certificate or award of merit was designed, and other certificates such as the first and second classes and botanical are in course of preparation.

"A system has been worked out for recording all introductions. This, in its initial stage, consists of a loose leaf book, to which additions, modifications or alterations may at any time be made. As all applications are numbered and filed, it will only be necessary at any time to refer to the file number to locate the application. Later all applications with the necessary data will be printed, permanently bound, and kept properly as a matter of record.

"The following is the personnel of the Canadian Plant Registration Committee:

Floral Committee—John Dunlop, Toronto; W. W. Gammage, London, Ont.; W. E. Groves, Hamilton; A. Gilchrist, Toronto; E. J. Hayward, Montreal; S. F. Wood. London, Ont.

Tree and Shrub Committee—S. Davidson, Fonthill, Ont.; A. V. Hall, Toronto; F. Carr, Oakville, Ont.

Fruit Committee—Professor Macoun, Ottawa; Professor Bunting, Ste. Anne de Bellevue, Que.; Father Leopold, La Trappe, Que.; Peter Reid, Chateauguay, Que.

Vegetable Committee—Professor Crow, Guelph; Frank Reeves, Humber Bay, Ont.; C. A. Smith, Lachine Que.; Robert Burrows, Ste. Anne de Bellevue, Que.

Scientific Committee—Professor Thompson, Toronto University; H. B. Sifton, M.A., Ottawa; Professor Buck, Victoria, B.C.

General Advisory Committee—H. J. Moore, Islington, Ont.; Professor Macoun, Ottawa; Professor Crow, Guelph; W. W. Gammage, London; E. J. Hayward, Montreal; C. A. Smith, Lachine, Que.; H. B. Sifton, M.A., Ottawa."

Before leaving this subject your committee desires to impress upon the members of the Ontario Horticultural Association the great importance of keeping the standard of awards very high, in order to gain and maintain the confidence of the public in the value of the awards.

The popularity of the Iris has increased greatly during the past few years, and there are now a large number of iris enthusiasts who will have nothing but the best. It is important, therefore, that each year novelties and other varieties of special merit be brought to the attention of this association. Miss M. E. Blacklock, Meadowvale, Ont., a member of this committee, has furnished the following in regard to newer irises and pæonies:—

The Newer Varieties of Iris.

Afterglow (Sturtevant). This and Nothung are very much alike, but Afterglow, with me, at least, is taller and has a little more brilliance. It is a very beautiful and striking Iris, mauve-grey throughout, with soft, but brilliant, yel-

low in the style, arms and crests; fairly tall, and the flowers well set on the stem, and of good size; very well worth having.

Alcazar (Vil.). A tall, vigorous, very fine Iris. S. a pinkish mauve with F.'s a reddish purple; while the colors are not brilliant they are very soft and beautiful, and the whole plant, with its stately growth and immense flowers, is very striking.

Ambassadeur (Vil.). This might be described as a larger, deeper colored Alcazar, very imposing in height, size of bloom and coloring. It is said to be rather shy flowering, but this remains to be proved. It appears to be of vigorous constitution.

Ann Page (Horts). This is a truly delightful Iris. The colour is nearly as beautiful and pure as that of Pallida Dalmatica, but the shape is quite different, though almost equally attractive. It is a large spreading flower of wonderful effect in the garden with its tall branching stems and stately mien.

Anne Leslie (Sturtevant). S. delicate pink. F. carmine. The colouring of this variety is very pretty, but it is not free enough flowering, or tall enough to be very effective.

Archeveque. A wonderfully rich, pure purple throughout, but too short in growth to be imposing, and the flowers are on the small side. Its deep color and velvety texture are its greatest assets.

Ballerine (Vil.). This Iris is very promising. Fine large mauve-blue. Growth, tall and stately.

Black Prince. The colouring of this Iris is still the most beautiful, to my mind, in the richness of the deep violet purple of its velvety Falls, and it is decidedly the latest to flower with me; but its gaping standards leave a good deal to be desired as to form, and its poor constitution and low growth are decidedly against it.

Dawn (Yeld). This is described as sulphur yellow, but is really barely off white; it is a good Iris, but not specially wonderful in any way.

Dominion (Bliss). The high price of this variety should not be taken as a positive proof of its desirability. Having only flowered it once. it is too early to say much about it, but compared with the performances of Magnifica, Ambassadeur, and a number of other new ones planted at the same time, it is a little disappointing. The coloring of the bloom is not as beautiful as that of Black Prince, the S. being a pinkish lavender, and the F.'s more of a plum purple (not indigo, as stated in description), but the flower appears to be of much better form. It may be that when well established, it will prove the marvel of beauty we have been led to expect. It is not always possible to judge of a flower's capabilities for a year or two—unfortunately it appears to be a weak grower.

Dimity (Bliss). This reminds one of Mrs. H. Darwin, being white with mauve pencilings near the throat. Probably it will prove an improvement on that good old variety in size of bloom and in the looser setting of the flowers on the stem. Time will tell.

Ed. Michel (Verdier). This is supposed to be a taller and richer coloured Caprice, but, with me, it has proved a poor grower and though the colour is darker the blooms are smaller. It is a little taller, but not as effective, as it does not appear to be free flowering. Perhaps my soil does not suit it or else it has been greatly overpraised.

Eldorado (Vil.). A wonderful combination of yellow, bronze, heliotrope and violet purple, with orange gold beard. Seeing it at close range one is filled with

admiration for the exquisite contrast of its colours, but the bloom is of weak structure, though large, and the stalks are short, therefore, from a short distance it is scarcely visible, as the prevailing colours are too brown to be noticeable, at least on any sandy soil.

Isoline (Vil.). A tall, large flowered, most beautiful variety. S. liac-pink, F. purplish old rose, with gold at the throat, and speckled with molten gold along

Cenotaph Erected by the Guelph Horticultural Society on the Soldiers' Plot. The Society Looks After the Plot and Holds a Decoration Day Each Year.

the haft; so wonderfully metallic is this gold that you feel you could pick out the grains with a needle. With me it is not a very strong grower.

Magnifica (Vil.). Huge flowers. S. light and F.'s darker violet blue, on tall strong stems. The leaves are broad and glaucous and suggest great vigor of constitution. This is a most promising variety, and in no way belies the description given of it.

Ma Mie. A pretty little Iris à la Mme. Chereau, without as decided a lavender edge. The flowers are a little larger, and do not hug the stem so closely, but it is not tall enough to be very effective.

Marsh Marigold (Bliss). A most brilliant variety. Though the yellow standards are not so deep a color as those of Maori King, and the Falls are very much the same, the flowers are so well placed and the stems so much longer, that the whole effect is very much better.

Mlle. Schwartz (Denis). If this magnificent Iris only proves to be hardy and fairly vigorous in our climate (a matter of great doubt, as it is from a Ricardii cross), it will be a great acquisition, as it has every other virtue. The large shapely flowers are of the most delicate and delightful shade of lavender-blue, paler than Celeste, on tall stately spikes.

Medrano (Vil.). Fair-sized flowers of a most peculiar and striking brown-crimson colour, Medium height. Decidedly attractive.

Monsignor (Vil.). This variety, in my opinion, is much overrated, or else there is something in my soil that prevents it doing itself justice. It is in two shades of purple, the Falls especially being splashed with a deeper purple. It is short, very floriferous, and has medium sized flowers.

Nothung G. & K.). So like Afterglow that it is needless to describe it, possibly another year it may be taller, but the spikes in 1921 (from August set plants of 1920) were not long enough to be very effective. Large blooms; A very attractive variety.

Parisiana (Vil.). Large flowers, well placed on tall stems of the Mme. Chereau type, but of pinkish lilac instead of lavender, and the colour carried over the flower by minute dots and veinings; quite effective.

Rodney (Bliss). A lovely pure blue with large well formed flowers. Good constitution.

Sweet Lavender (Bliss). S. pale lavender: F.'s deeper with a rosy glow, The coloring is charming, far more beautiful than it sounds. Remarkably free flowering with tall branching spikes. A very beautiful variety.

Tristram (Bliss). S. pure white, F.'s deep black-purple. This is supposed to be an improvement on Thorbeck. It is very free flowering, but the flowers hug the stem too closely to be effective or graceful. Strong grower.

Some of the Newer Pæonies.

The numbers following the name of the originator denote the ranking of the variety in the American Pæony Society's Symposium, based on the votes of the members. The voting is upon a scale of ten, in which a grade of ten represents the highest excellence.

Auguste Dessert (Dessert). This has not been planted long enough to give typical flowers, but the colour is very brilliant and pleasing, and one feels it has great possibilities.

Ginette (Dessert) 8. 8. Another very choice early blooming variety of delicate coloring. It is difficult to predict accurately which will prove the finest of these three, Ginette, Jeannot, and Rosette, as they have not been planted long enough to give typical blooms, but the odds are in favour of Jeannot.

Jeannot (Dessert, 1918) 8.9. A charming bloom, large and of very delicate coloring, probably it will prove to be one of the very choicest of the newer Pæonies.

Mme. Jules Dessert (Dessert, 1909) 9.4. This is an older Pæony than any of the above, but it has not been much grown in Canada. It is a very beautiful thing. It opens a delicate pink and fades to almost pure white.

Philippe Rivoire (Riviere 1911) 9.2. This ranks the highest of any crimson Pæony, so in the mass it must be beautiful. The color is a peculiar shade of deep purple-crimson, American Beauty boiled down to a deep color would perhaps convey a fair idea of it. The only blooms I have seen have not been very large. It does not convey the impression of being a showy landscape variety, as the color is soft rather than brilliant.

Raoul Dessert (Dessert) 9.0. Enormous, full flower of fresh rosy-pink with a little extra warmth in the heart. It would be a callous person that would pass by this Pæony without an exclamation of delight as it is the type that appeals to all. A tall vigorous grower and free bloomer, in clusters.

Rosette (Dessert) 8.9. Scarcely as beautiful as Jeannot, but a very desirable early variety.

Solange (Lemoine, 1907) 9.7. The coloring of this variety is quite unique, a creamy pink deepening at the heart to an almost butter-yellow and flesh. Large beautifully formed, flowers freely produced. Fairly vigorous grower. Generally conceded to be one of the most beautiful paeonies at present in existence, as its rank indicates.

Tourangelle (Dessert, 1910) 9.4. This charming variety is a delicate pure, almost flesh pink with no hint of the objectionable magenta in it. Its flowers are of fair size and pretty shape, and to see it is to love it.

Newer Pæonies of American Origin.

Elizabeth B. Browning (Brand) 9.2. This is a very fine variety that promises very well, and its high rating in the Symposium shows that it is likely to prove worth having. It is not as good a grower with me as Frances Willard.

Frances Willard (Brand, 1907) 9.1. A large free flowering white, that promises to become very popular. It is a free grower and bloomer.

Karl Rosenfield (Rosenfield). A very brilliant and attractive red variety with fairly large flowers in clusters. A vigorous grower.

Mary Brand (Brand, 1907) 8.7. This is a little richer and more brilliant in color than Karl Rosenfield, and both are better, in my estimation, than Longfellow, which ranks 9.0 in the Pæony Symposium, while Mary Brand only ranks 8.7 and Karl Rosenfield 8.8. Mary Brand is a fairly large flower, and in shape, growth and fragrance leaves little to be desired in a crimson pæony.

Longfellow (Brand, 1907) 9.0. This variety was procured from the Peterson Nursery, Chicago, and as they guarantee their stock true to name, I have every reason to believe it is the true variety, but, after the plaudits it has received from all sources, I must confess that it has not come up to my expectations. It is a good Pæony, but not so good as Karl R. or Mary B., which both rank several points lower in the Symposium. It may be that my soil does not bring out its full beauty.

Walter Paxon (Richardson) 9.3. A wonderfully pure and lovely shade of pink of medium size and inclined to be bomb-shaped, the texture delightfully soft, as in La Tendresse. Fairly free bloomer, but not especially robust in growth.

The following contribution is from Mr. W. E. Saunders, London, Ont., another member of the committee, who endorses Miss Blacklock's statements in regard

to some of the new varieties of Iris, and gives further information in regard to others.

THE NEWER IRISES.

At the time of our last remarks on Irises, the list of quality was headed by such varieties as *Alcazar* and *Isoline,* introduced by Vilmorin, Andrieux et Cie, Paris. Since that time there has been a wonderful improvement in the species, and a whole new gamut of wonderful varieties has been introduced. The Frenchmen are still in the forefront, but some of their varieties are put on the market by English firms, and there are also notable contributions by Americans as well, though their flowers are usually held at prices that none but dyed-in-the-wool fans are willing to pay, and the result is, that most of their varieties are unrepresented in Canadian gardens. There is also the impression that the American varieties do not possess the same superfine quality that is found in France; indeed, some recent American introductions have been adversely criticized by officers of the American Iris Society.

The following remarks are therefore necessarily confined to varieties of European origin, and as some of them have been available for only a year or two, opinions now expressed are subject to revision in the near future. All your committee can say is that the following statements express the opinions of several Iris growers up to the present.

The firm of Vilmorin stands perhaps at the head of the Iris world, and shall therefore receive first consideration. Their new varieties have been fairly tested in the London district, and *Ambassadeur, Ballerine, Cluny, Grevin, Magnifica* and *Moliere* have been found worthy of the highest praise. *Ambassadeur* is a noble Squalens of fine habit, with large and substantial flowers of the richest tints. *Ballerine, Cluny* and *Magnifica* are bicolors that arouse enthusiastic comment from every beholder. *Moliere* so far appears to be rather dwarf, but with enormous flowers in which the blue is modified by red. *Grevin* is of the deep rich garnet color found in *Opera,* previously introduced by the same firm, an exceedingly rich color and a flower of great beauty.

Perhaps the outstanding Iris of the world to-day is the product of the skill of Bliss, the celebrated English hybridizer, and is named *Dominion,* and it is unfortunate, though perhaps unavoidable, that Messrs. Wallace and others, who offer it for sale, have not yet been able to recede more than a trifle from the introduction price of 5 guineas. The flower is a marvellous blue of a richness previously unequalled, and an American visitor reported that the stock at Wallace's was "much depleted, owing to the enormous demand."

From the garden of Millet and Son, in France, comes the great Iris, *Souvenir de Mme. Gaudichau,* said by some export growers to be the finest Iris they have ever seen. *Ochracea Cœrulea,* by the same men, is an Iris of great promise.

Mlle. Schwartz, by M. Denis, is the choice of another enthusiast as the very best, so it will be seen that while opinions differ, all unite in thinking that one of the new ones is the very finest.

Lent A. Williamson is the fourth of the new rich blues that are acclaimed at the top. It is an American variety, and the plants so far reported have not yet bloomed.

Wallace and Co. are the distributors of a large group of new Irises by Denis, Bliss, Van Hort and Yeld, and from this group we may look for many fine things. They are all, or nearly all in Canada, but some of the young plants have not yet

bloomed, and no opinions can be very definite as yet. *Crusader* and *Lord of June* are certainly very fine bicolors of great stature, and fine substance and color, bearing many magnificent flowers on a spike, and in that respect lies one great point of superiority of the new Irises over the old ones. *Lady Foster* is a lovely pale mauve, practically self-colored. *Clematis* opens after the style of a Kaempferi with very beautiful markings on the lavender petals. *Deuil de Valery Mayet* is a splendid wine red, and seems to be one of the coming kinds. *Dimity* is one of the new frilled ones, probably better than Mme. Chereau, and it takes no mean flower to eclipse this very old variety. *Sunshine, Viola, Tomtit* and *Sweet Lavender* may easily be worth while, but Yeld's *Dawn* seems to lack sufficient character to make it sure of a place in the garden of the critical Iris grower.

Tristam and *Richard* are striking flowers of the Thorbeck type, white above and deep violet below, the former having the advantage in height and perhaps in quantity of bloom.

The following list of gladioli is contributed by Mr. H. L. Hutt, another member of the committee,—

A Few of the Best Gladioli of Recent Introduction.

1. *Anna Eberius* (Diener, 1917). Dark velvety purple, throat of deeper shade. Large flowers on tall spikes.
2. *Anthony B. Kunderd,* (Kunderd, 1918). Large ruffled flowers of deep cream color, overspread with a pink blush; lower petals primrose cream, flushed pink at edges.
3. *Byron L. Smith* (Kunderd, 1917). Lavender pink on white ground, colored like a Cattleya orchid.
4. *Bertrex* (Mrs. Austin, 1914). A beautiful glistening white; tall and vigorous.
5. *Catharina* (Velthuys, 1916). An excellent light grey-blue, lower petals a little darker with brownish red spot. Tall spikes.
6. *Crimson Glow* (Betscher, 1916). A deep brilliant crimson. Flowers large on tall graceful spikes
7. *David Starr Jordan* (Diener, 1917). Very large bright red or flame colored flowers.
8. *Evelyn Kirtland* (Mrs. Austin, 1916). A beautiful shade of pink deepening towards the edges. Large wide open flowers on tall graceful spikes.
9. *Flora* (Velthuys, 1917). A large, light golden yellow. Ranks next to the famous Golden Measure as the best yellow.
10. *Gretchen Zang* (Mrs. Austin, 1915). A glistening rosy pink. Stems grew crooked during the hot weather last summer, but in the cooler season, later, the blooms were exceptionally fine.
11. *Herada* (Mrs. Austin, 1916). Another of Mrs Austin's "Big Four." Pure mauve, large flowers; a vigorous grower.
12. *L'Immaculée.* An early pure white, which does not tint in the sun. Many flowers open at once.
13. *Jack London* (Diener, 1917). Bright salmon with flame-colored stripes and yellow throat. A good grower and great multiplier.
14. *Lady Borden* (Gilchrist). A Canadian variety. Large creamy white flowers with large crimson blotch in the throat. Blooms late.
15. *Liebes Feuer* (Velthuys, 1912). A brilliant scarlet. Tall spikes and many flowers out at once.

16. *Le Marechal Foch* (Van Deursen, 1919). A Holland variety said to be a seedling of America. Flowers much larger than America, of about the same shade of lilac pink. As early as Halley, and as good a multiplier.

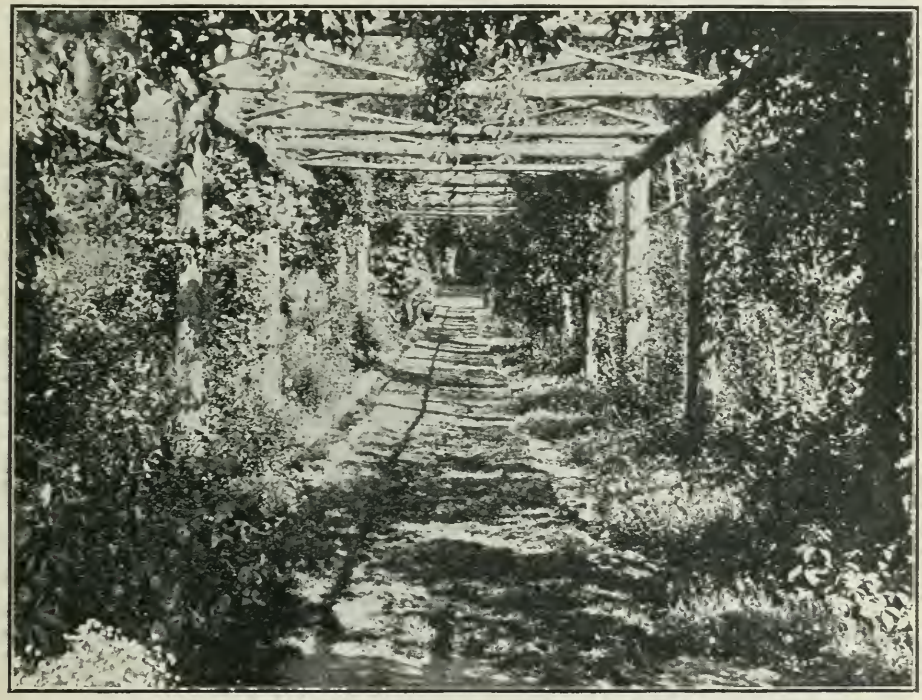
17. *Loveliness* (Van Konynenburg, 1912). Large creamy white flowers tinted pink. A beauty, appropriately named.

18. *Mrs. Dr. Norton* (Kunderd). Large silvery white flowers tinted with pink, deepening towards the edges, with sulphur-yellow centre. An aristocrat among the gladioli.

19. *Mrs. Watt* (Crawford). American Beauty rose solid self color.

20. *Myrtle* (Kunderd). Delicate rose pink, shading to creamy white in centre. Very dainty.

21. *Prince of Wales.* A clear, salmon pink. Large flowers, blooming very early.



Pergola, C.E.F., Ottawa.

22. *Pride of Hillegom.* Another fine variety from Holland. Large bright scarlet flowers on tall spikes.

23. *Summer Beauty* (Kunderd). Clear, salmon pink; long spikes; a strong grower.

24. *Violet Glory* (Kunderd). A self-colored, deep, rich violet, flowers large and slightly ruffled.

25. *White Giant.* Very large pure white flowers, with pointed spreading petals. Lily-like in appearance.

The following contribution is from Miss I. Preston, Secretary of the committee.—

THE NEWER ROSES.

During the summer of 1921 a number of the two newer roses were grown at the Central Experimental Farm at Ottawa. Notes on some of the outstanding varieties may be of interest to this Association.

HYBRID TEAS:

Aladdin. Coppery orange to yellow, fragrant, good in autumn.

La Champagne. Chamois yellow with apricot centre; large; good in autumn.

K. of K. Semi-double; intense scarlet, brilliant colour.

Margaret Dickson Hamill. Straw coloured; deeper shade in the autumn.

Pernetianas:

Gottfried Keller. Single; apricot, spicy fragrance.

Mrs. Farmer. Indian yellow: reverse of petals, apricot. beautiful colour: medium sized flowers.

Climbers:

A test of climbing roses is being made at the Experimental Farm, and out of the forty varieties grown in 1921, the following were specially noted,—

Christine Wright. Bright pink, medium sized, double flowers.

Leontine Gervais. Salmon rose, very attractive colour.

Paul's Scarlet Climber. Strong grower with good foliage; flowers semi-double, vivid scarlet, shaded with bright crimson. Source d'Or.—Buds yellow, fading to cream when fully open; double.

POLYANTHA POMPONS:

Polyantha pompon roses, as a class, are very successful at the Experimental Farm. They have a longer season of bloom than any others; the first buds show early in June, and the last ones are buried under the snow in November. Some mildew was noticed on a few plants in the fall, but most of the varieties seem perfectly healthy and free from insects all the season. They can be obtained in many colours, and although the blossoms are born in clusters, the shape and doubleness of the flowers are so varied that a collection of them is full of interest. Special mention should be made of the beautiful shape of the buds in a Cecile Brunner, George Elger, Etoile luisante, and others. Out of the collection of forty-eight varieties tested, the following of the newer sorts are recommended:—

Eblouisante. Very double, deep red flowers, very beautiful, and effective in beds.

Echo. A Dwarf form of Tausendschon. Semi-double, pink flower.

Etoile luisante. Buds vermilion, opening coppery pink.

George Elger. Yellow, opening cream. Large clusters.

La Marne. Semi-double, salmon pink flowers; dark green glossy foliage.

Merveille des Rouges. Bright, velvety crimson.

Renoncle. Pink, large clusters of Ranunculus shaped flowers.

Rodhatte. Clear, cherry red, large clusters of large semi-double flowers.

Yvonne Rabier. Double white, good foliage.

The following are some of the best of the older sorts:—

Aennchen Muller. Bright pink.

Jessie. Bright orange-red.

Katharine Zeimet. Pure white; free blooming.

Mrs. W. H. Cuthbush. Bright, deep pink: free flowering.

Orleans Rose. Vivid rosy crimson; free flowering.

HYBRID RUGOSA:

Few hybrid rugosa roses of great merit have been introduced in recent years, but the two following are worthy of mention,—

F. J. Grootendorst. Foliage like rugosa. Flowers bright red with fringed petals. Small double blooms in large clusters. Perpetual flowering.

Agnes. A hybrid between rosa rugosa and Persian yellow, raised at the Central Experimental Farm by the late Dr. W. Saunders. Foliage like rugosa. Flowers double, pale amber; form good in the bud, not so good when fully open; fragrant. Very early.

W. T. MACOUN, C.E.F.,
Chairman.

MR. MACOUN moved the adoption of the report.

H. J. MOORE seconded its adoption, saying: I think the idea of appointing amateurs to the Plant Registration Committee is the right thing.

Goat's Beard Spiraea.

IMPROVED HOME SURROUNDINGS.

A. H. TOMLINSON, GUELPH.

The improvement or beautification of home surroundings means not only planting a few flowering plants or a tree adjoining the house, but bringing about the beautification of the whole neighbourhood.

The Creator has given us a wonderful landscape rich in streams, trees, meadows and flowers. The progress of industry often causes the removal of these, and we have instead crowded industrial centres where flowers and trees have little chance.

Mankind has always been associated with the beauty and wonder of the sky and the earth's surface. The human family cannot remain healthy in body and soul if the direct sun's rays, fresh air and restful scenery are excluded. Crowded conditions result in an inferior generation. We are indebted to the Creator for these first gifts and restoration of some kind is needed.

This suggests that a working plan is necessary for any constructional or reconstructional scheme. There is a right location for homes, public buildings, factories, parks and playgrounds. Furthermore, all must be planned with due consideration for traffic.

The work of improvement rests with the individual as well as public bodies. One enthusiastic lover of the beautiful after making his own immediate home surroundings worth while and largely through his example creates community interest in improving home grounds, streets and well ordered open spaces. Nowadays much greater attention is being given to this movement, but there is a great need for further education and development. Ugliness and unhealthy conditions must give way to the beautiful and healthful.

There are various institutions closely allied to the home, particularly the school, play and church grounds. Surely the surroundings of all these places deserve our best endeavours. Picture such amidst beautiful flowers, lovely and majestic shade trees, restful evergreens, and lawns properly arranged! No doubt well laid out home, school and playgrounds are worth more to the locality than anything else in the improvement scheme.

The love of the beautiful is an innate quality which becomes smothered if continuous conditions of ugliness prevail. Beautiful surroundings are inspirational in character.

One may consider the advisability and scope of home ground improvements to a degree but with these schemes, whether small or large, some definite system should be followed. The aim should be to create a harmonious whole, even though there may be many units. From a landscape gardening point of view two great styles predominate, viz., the naturalistic or landscape style and the formal or architectural. These include many subordinate styles or systems. Where the buildings are of marked architectural importance the formal style should be followed particularly at the main entrances, although a naturalistic arrangement of trees and evergreens may form the background and proceed also from the immediate front lawn or terrace. The formal style should be of definite design and may be complete or a part of a larger scheme. It may be adopted for a flat area where space is limited, or slopes. Variety may be introduced with statuary, terraces, still water, enclosures and accentuations made with planting material. The naturalistic style is brought about with uneven surfaces, open lawns, group planting, vistas, running water and an absence of apparent boundaries. Extensive grounds may have various gardens, such as Italian, Dutch or sunken, a rosarium, a rock and wild flower garden and yet the style of the whole be naturalistic.

Whatever style predominates in any system there must be a definite theme characterizing the whole; variety ought to be featured, yet dignity and expression must be paramount.

With all due regard to styles in landscape art, also systems, plans and designs, let us plant something! Trees for beauty and shade, evergreens for shelter in winter and for a restful effect in summer; flowers for a continuous blooming from spring until fall; open spaces for grass and playground! Furthermore, th

scheme should have a local expression. It should be Canadian in particular. Our expanse of country must be thought of. We should never crowd in planting. The beautiful should be the aim but attention must be given to protection from the sun's rays in summer and from the wind storms of winter.

What to plant may concern us! Our native flora and sylva ought to be planted in the right places and must not be forgotten! Many indigenous varieties are hard to beat. Amongst many the following may be planted:—

Deciduous Trees:

White or Swamp Elm (Ulmus Americana) a most majestic tree.

Tulip tree, Liriodendron tulipifera. A handsome tree in flower and foliage, not hardy north.

Cucumber tree, Magnolia acuminata. Like the foregoing and has very attractive cucumber-like red fruit. red in summer.

Black Walnut, Juglans nigra. Attractive foliage and form with edible nuts.

Conifers or Evergreens:

White Spruce, Picea canadensis. Very attractive glaucous foliage and form.

White Pine, Pinus strobus. Long lived and picturesque.

Red Cedar, Juniperus virginiana.

Common Juniper, Juniperus communis. Both splendid in groups or singly, of conical shape.

White or Swamp Cedar, Thuja occidentalis. Fine for hedges or windbreaks and stands trimming well.

Ornamental Flowering Shrubs:

Burning Bush or Strawberry Tree, Euonymous atropurpurea. It has most interesting red and tango coloured fruit in fall.

Highbush Cranberry, Viburnum opulus. Splendid in fall when covered with purplish-green foliage and scarlet berries.

Deciduous Climbers:

Bittersweet, Celastrus scandens. Wonderfully attractive in fall with red and yellow winged fruits.

Wild Flowers:

The Hepaticas; Trilliums, Orchids, (Lady's Slipper and Moccasin flower); Adder's tongue, Erythronium Americanum; Marsh Mallow, Caltha palustris; Lobelia Cardinalis. These and many more are worth planting and are more beautiful than many expensive exotic plants.

Specimens of foreign origin must be given the place due to them. They give us variety and many are indispensable for home gardens or improvements if planted in the right localities as climatic conditions govern.

Deciduous Trees:

Maiden-hair Tree. Ginkgo biloba—Oriential and classical.

Copper Beech. Fagus purpurea—The best colored foliage tree but only hardy in warmer districts.

Cutleaf Birch, Betula laciniata pendula.

Cutleaf Maple, Acer laciniata. The two best weeping trees.

Schwedler's Red Norway Maple, Acer Schwedleri—A splendid tree with compact head and red foliage in early summer, later purplish-green.

Norway Maple, Acer platanoides. A fine street tree.

CONIFERS:

Silver Fir, Abies concolor. A most graceful conifer.

Blue Spruce, Picea pungeus. Splendid for formal planting.

Dwarf Mountain Pine, Pinus mugho. Excellent for foundation use.

Pyramid and Globe Cedar, Thuja pyramidalis and globulus. For formal and foundation planting.

Asters Grown at Brantford.

SHRUBS:

There are so many varieties which are deservedly popular as Spiræas in variety, new type of Lilacs, Syringa vulgaris variety; many Honeysuckles, as Lonicera fragrantissima.

Wiegelias, as Diervilla Eva Rathka.

Deutzia, as Deutzia lemoine and crenata variety.

Japanese Barberry, Berberis thunbergia. The best dwarf shrub for hedges or effect; also, varieties of Forsythia, Cydonia, Prunus, Philadelphus, Chionanthus virginica, Althaea, and others.

PERENNIAL CLIMBERS:

The following are worthy:

Boston Ivy. Ampelopis Veitchii is the best self clinger.

Clematis Jackmanii is first-class.

Wistaria sinensis, with its long racemes, a great acquisition in warmer sections like Niagara.

ROSES:

The best climbers and Hybrid Teas are surely indispensable.

PERENNIALS:

Here I would say plant the best varieties of Pæonies, Iris, Phlox, Delphiniums and Asters.

ANNUALS:

These have their place whether it be for formal or informal planting.

Talking or writing may cause interest but action is needed. In closing I would say, individuals, Horticultural and kindred Societies, Civic bodies, the Governments, Agricultural Colleges and Experimental Farms have their part in this work. Specialists are wanted for extension service to assist the different Community Societies—organization is required.

This generation must construct for the next and as Kingsley has said in his little poem, "Farewell":—

"Do lovely things, not dream them all day long;
And so make life, death, and that vast forever one grand sweet song."

REPORT OF EXHIBITION COMMITTEE 1921-22.

The following resolution was passed in Convention 1921:—

Moved by Mr. W. J. Evans, seconded by Mr. J. P. Jaffray, and carried: "That a Standing Committee of three to be known as the Exhibition Committee be appointed. The work of this committee to consist of arranging with the Canadian National Exhibition and with the Royal Agricultural Winter Fair for exhibits of flowers, etc., from the nine districts of the Ontario Horticultural Association."

Personnel of Committee—MISS YATES, *President.*
J. E. CARTER, *Director District No. 7.*
J. LOCKIE WILSON, *Secretary.*

1. Display made at the Canadian National Exhibition, Aug. 27—Sept. 10.

Copies of the resolution together with shipping directions were sent to all Societies in the nine Districts. Each District was allotted a special date for sending in flowers in order to maintain as even a display as possible. The Directors and Executive were also written to asking them to take an interest in these dates, and to assist the work in their own Districts to their utmost ability.

The response was gratifying. Seven of the nine Districts were represented in the display, viz., Nos. 1, 3, 4, 5, 6, 7, and 8. Twenty-three Societies sent in the neighborhood of twenty tons of flowers, which provided fresh blooms throughout the two weeks of the exhibition.

Analysis.

District.	*Society.*
1	Perth.
3	Fort William, Creemore.
4	Whitby, Markham. High Park, Port Credit. Toronto, Thornhill, Weston. Riverdale, Richmond Hill, Aurora.
5	Hamilton.
6	Seaforth, Owen Sound.
7	Kitchener, Brantford, Guelph, Elora & Salem.
8	St. Thomas, Stratford, Woodstock.

Assistants.—Directors Carter, Hartry and Bennett accompanied and staged the splendid contributions from their Districts. Fifty-five private members gave their services during the exhibition for the necessary but heavy and tiresome work of emptying and filling the flower containers with water and clearing away dead flowers. Special appreciation is due to Miss Kate Graham, a young student in the Horticultural Department of the O. A. C., and also to Mr. Frank Johnston of the staff of the Ontario Department of Agriculture, whose courteous help contributed to the success of the display.

Vases.—One thousand flower vases were generously loaned by the Toronto Society.

Space.—The Department of Agriculture gave every encouragement to the work by permitting the display to be made in the Government Building. Mr. J. Lockie Wilson provided space for it in the centre of the position allotted to his Branch. He also obtained for the use of the committee, two large octagons which were placed in the opening of the Agricultural Annex. In all, 500 sq. feet of space were kept filled with fresh hardy flowers from the gardens of the Province for the two weeks of the Exhibition.

Features of Interest.

(1) An information bureau was kept supplied with named choice varieties of flowers. Circulars and bulletins on flower growing were provided here for the general public whose interest appeared unbounded. Special services were rendered in this bureau by the First Vice-President, Rev. W. M. McKay, Mr. Thos. Dockray the Director of District No. 4, and the President of the Toronto Society, Dr. J. M. Baldwin, assisted by many members of other Horticultural Societies.

(2) The plan included a section of a flower border twenty by nine feet arranged in a massed color effect of gold, orange, brown and blue. Fifteen hundred plants of orange Calendula and of blue Ageratum had been grown potted up and delivered on the ground by the Societies of Thornhill (both adult and junior) and Richmond Hill. These plants with five hundred grown by the President formed the front of the border. The seeds for this purpose were donated by Messrs Sutton & Sons, Reading, England. Behind this frontage the hardy flowers in brilliant colors were massed in handsome effect. The two octagons were kept filled with an ever changing variety of bloom, the design frequently demonstrated methods of planting circular flower beds in effective color schemes. For some days one was filled with field grown gladioli from the farm of Mr. J. Ruthven Wilson, The Oaks, Clarkson, a most creditable display being made with Lady Baldwin.

(3) For the opening date District No. 7 under the leadership of Mr. J. E. Carter supplied superb asters, some of which were presented by the President to Her Excellency Lady Byng during her visit to the O. H. A. display. She pronounced these asters to be as fine as anything seen in England.

(4) Dr. F. H. Tolmie, Federal Minister for Agriculture, Premier Drury of Ontario, and Mayor Church of Toronto all expressed themselves delighted with the richness of the color effects and the quality of the blooms displayed.

(5) The Societies deserve the greatest credit for the manner in which the shipping instructions were carried out and for the quality of the blooms sent.

Of outstanding merit were—1. The fifteen large bowls of sweet peas sent from Fort William, stems from fifteen to eighteen inches long, four and five florets to a spike. 2. The superb named collection of gladioli from trial grounds of the St. Thomas Horticultural Society. 3. A basket of remarkable crimson, seedling currants grown and shown by Mr. J. R. Berney, member of the Owen Sound Society. They attracted a great deal of attention by reason of their size, color and long bearing season. 4. The two motor truck loads of bloom from the Markham Society which were delivered at the grounds and staged by one of their prominent members, Mr. Harry Rolph.

FINANCE.

No appropriation was made by the O. H. A. to cover the necessary expenses of this display. They were met as economically as possible by the President who submits the accompanying statement with vouchers.

Equipment including 36 pails	$20.25
Allowance to hired help	26.65
Transportation charges	10.25
Correspondence	2.85
	$60.00

2. As the Royal Agricultural Winter Fair was not held there was no necessity to arrange for a display.

All of which is respectfully submitted.

MARY YATES.
J. E. CARTER.
J. LOCKIE WILSON.

REPORT OF COMMITTEE ON GLADIOLI DISEASE.

Twenty-three letters and interviews have been drawn on for this report.

Eighteen of these report no disease; most of these have had Holland bulbs in addition to Canadian and American. Five of these report the presence of disease, but in no serious amount.

Most of these reports are from men who have seen the disease and it is believed that almost all members of the association have had some small experience with it, but no instance has come to the knowledge of your committee in which the disease existed in serious quantity.

Prof. Howitt of Guelph stands ready to examine and report on any diseased bulbs sent to him, and your committee would recommend that all members adopt one of two courses: either send their few diseased bulbs to Prof. Howitt, for examination, or burn them.

The small quantity of disease that has been reported to your committee and the fact that bulbs from all sources have been diseased, and it has even been found on seedlings of Canadian origin and that no one source has been worse than the other, lead your committee to recommend that no present action be taken in this matter.

The Chairman of the Committee moves the adoption of this report and that the Committee be discharged.

WM. HARTRY.
W. E. SAUNDERS.
LIEUT. W. BENNETT.
W. T. MACOUN.

MEMBER: It has been stated that probably eighty or ninety per cent. of the Gladioli in Ontario are free from disease. We grow 100,000 a year, and for the last two or three years more or less of those coming from Holland have been diseased. Some give more trouble than others. It would appear that good home-grown stock is preferable at any time to that of the imported, for the reason that we have no facilities for testing out these diseases. It is regrettable that we have not at the Agricultural College or some other place, good laboratories where they could test them out; then the disease might be eliminated. One told me that last year he burned about 100 bushels of Gladioli bulbs because he could not put them on the market as they were diseased, and if such is the case, it is not well to pass over it lightly.

W. T. MACOUN: I am sure both Ottawa and Guelph will do all that is possible to help in this matter.

THE PRESIDENT: In view of the fact that the Chairman of this Committee has produced healthy plants from not so healthy looking bulbs it looks as though that would have been desirable treatment for those which were burnt.

PRESIDENT: Can anyone tell me what is the average life of a corm? I have samples here tested from apparently unhealthy corms and the result showed something comparable to healthy corms. Would these corms last a few years until they were tested out?

Dr. Brethour said that he had held them over for the second year.

WM. HARTRY: Last year I asked Mr. Austin about his experience, and he said: "I had a large number of bulbs that I had sold. After I got them ready to ship I found out they were bad. I did not ship them, of course, and I put those bulbs in a piece of ground isolated from other bulbs, and I never got such fine bulbs in my life."

It was then moved and seconded that the report of this Committee be laid on the table and published in the Annual Report.

Mr. Carter then moved: "That the Committee be made a Standing Committee to deal with any similar diseases, and that the thanks of this convention be tendered them for their able work.

Rev. Mr. Smith of St Catharines seconded this motion, which was carried.

RESOLUTIONS.

REV. MR. MACKAY then reported for the Committee on Resolutions.

Moved by J. P. JAFFRAY and seconded by W. E. EVANS: "Whereas this Association having since 1918 at every annual meeting put itself on record as opposed to the defacement of the country by lines of billboards marring some of Ontario's most attractive beauty spots; Resolved that this Association hereby tender to the Provincial Highways Department its hearty congratulations on the issue of recent regulations pertaining to this nuisance, practically eliminating billboards along the Provincial highways, and thus paving the way for a cleaner and brighter province to which hundreds of thousands of tourists will annually pay due tribute."

Carried.

Moved by J. E. CARTER, Guelph, seconded by R. R. GRAHAM, Guelph: "That whereas Mr. J. B. Spencer, President of the Experimental Union of Canada, has prepared an excellent paper on the need of Rural Beautification, be it resolved that Mr. Spencer be requested to permit the publication of this

paper in the Ontario Horticultural Association's Annual Report for the benefit of the members of the various Horticultural Societies throughout the Province."

Carried.

Moved by J. A. MACLAREN, Barrie, and seconded by J. M. PEAREN, Weston: "That the Secretary of this Association be instructed to prepare and publish in the Annual Report a list of available speakers on horticultural subjects, with the address of each and a list of subjects stating whether illustrated or not, and that the various Horticultural Societies be requested to send to the Secretary, names and subjects of good Horticultural lecturers in their vicinity available." Carried.

Moved by MRS. MALCOLMSON, St. Catharines, and seconded by MR. HESSON: "That previous to the Annual Convention of this Association, a copy of the programme be mailed to the secretary of each society for every delegate who is entitled to attend the Convention."

Mr. Wilson said a copy of the programme was mailed to each secretary, but thought it was a good idea to have a programme sent for each delegate. Carried.

Moved by D. JAMES, seconded by J. P. JAFFRAY: "That a special committee be nominated to consider the advisability of selecting a typical flower as an emblem for the Province of Ontario, and report at the next Annual Convention of this Society." Carried.

Moved by H. J. MOORE, seconded by H. OCCOMORE: "That the representatives of the Horticultural Societies of the Province in the 16th Convention of the Ontario Horticultural Association recognizing the valuable work done in plant registration by the Florists and Gardeners in Canada, a synopsis of which is outlined in bulletin No. 1, and viewing with uncommon interest at this particular time the inviting and expansive branches of service in Pomology, Olericulture, Floriculture and Landscape Horticulture, are agreed that the period has been reached in Canadian record when the interests of these four departments of intensive soil activity would be promoted by

"First—The passage of a Dominion Registration and Standard Act; and

"Second—The holding of a Dominion Horticultural Exhibition.

"In view of these two requirements for the furtherance of scientific and practical soil culture they do now

"Firstly—Name and appoint H. J. Moore, Prof. W. T. Macoun, Dr. Brethour, Prof. Hutt, Miss Blacklock to act as representatives of this Association; and that they in conjunction with representatives to be appointed by kindred other organizations working on kindred lines, be charged to prepare and submit to the Department of Agriculture at Ottawa facts and figures bearing upon the important service to Canada of intensive soil production with the request than an Act be passed covering the horticultural requirements as to-day, and

"Secondly—Name and appoint another committee as follows: J. E. Carter, Dr. A. H. Scott, T. D. Dockray, J. M. Pearen, and G. Simpson, who shall act with representatives and kindred organizations or associations, whose duty it will be to prepare and submit for the approval of those immediately concerned, a workable plan for the carrying out of a Dominion Exhibition at which interested persons on each or all of the aforesaid branches of Horticulture throughout the Dominion may have opportunity to set forth in friendly competition the

results of the skill and wealth of intensive soil production in Canada." Carried.

Moved by J. M. PEAREN, seconded by C. A. HESSON, "Resolved that the Minister of Agriculture of Ontario be and is hereby petitioned to retain out of the Annual Legislative Grants to various Horticultural Societies, the following amounts in accordance with the following schedule, that is to say, from societies entitled to receive a grant of over

$100	and	less	than	$200	.....	3%	of	said	grant.
$200	"	"	"	$300	.....	5%	"	"	"
$300	"	"	"	$400	.....	7%	"	"	"
$400	"	"	"	$500	.....	8%	"	"	"
$500	and	over	.....	10%	"	"	"

and that from societies receiving less than $100, a stated sum of three dollars shall be retained and paid to the Treasurer of the Ontario Horticultural Association for the use and purposes of this Association in lieu of all affiliation fees.

Pæonies at Ottawa.

Memo based on grants of 1921.

28	Societies	received	$100	and	less	than	$200	@ 3%	$120.00
5	"	"	$200	"	"	"	$300	@ 5%	65.00
6	"	"	$300	"	"	"	$400	@ 7%	134.61
2	"	"	$400	"	"	"	$500	@ 8%	69.76
9	"	over	$500					@ 10%	612.21
								Total	$1,001.58
								Revenue O. H. A. 1920	$292.00
									1,000.00
									$1,292.00

"This resolution shall not be effective until the consent of the majority of the Ontario Horticultural Societies affiliated with this Association has been obtained, and that the secretary be instructed to forward a copy of this resolution to each secretary in the Province with a request that a special meeting of the Society be called and the resolution acted upon at once."

W. E. Saunders, of London, here proposed an amendment "That the various societies be assessed a uniform amount," as he did not think it fair just because a society was larger to discriminate against it. This was seconded.

An amendment to the amendment was proposed: "That Mr. Lockie Wilson deduct $5 each year." The President, however, stated that that would be impossible as Mr. Wilson could do nothing outside of the act.

It was here moved in amendment to the amendment, by Mr. Davidson, seconded by Mr. Taylor, of St. Thomas, "That this matter be laid on the table for one year."

The amendment to the amendment was then put to the meeting and was lost.

Amendment was then put to the meeting and was lost.

The motion was carried.

Moved by W. J. Evans, seconded by L. Norman, "That a committee consisting of the President and Officers of this Association be appointed to arrange for a deputation to wait upon the Premier and Members of the Cabinet at an early date, to urge the necessity of an increased Legislative Grant of at least $10,000." Carried.

IN MEMORIAM.

Moved by Mr. Norman, seconded by Mr. Evans:

"The membership of our Association throughout the province have learned with sincere regret of the death of our esteemed Director, John Glassford, of Chatham.

"Broadminded, enthusiastic and fair in all his work, he ever proved a worthy laborer for our cause, which he had so close to his heart.

"We deeply regret his passing and extend to his family our heartfelt sympathy for their irreparable loss, and request that a copy of this resolution be forwarded to his bereaved family." Carried.

Moved by Dr. A. H. Scott, seconded by Wm. Hartry:

"On the demise of the late W. B. Burgoyne, of St. Catharines, a notable blank is created among the ripest and sanest Horticulturists in Canada.

"A member of the Ontario Horticultural Association Executive from its inception, ever appreciative of the larger things of life, addressing himself to duty with a mind fertile in initiative, zealous for those improvements locally and generally that tend toward beautification and productiveness, generous in hand, lovable in heart, discreet in counsel and influential in every way for that which is good, all who bear responsibility in advancing the interests of horticulture in Ontario miss him greatly.

"The membership of this Convention recognizing the fruits of his labours join with the Executive, who knew him best, in placing upon record this token of appreciation of his personal worth and eminent services, and request that a copy of this resolution be conveyed to his widow and family." Carried.

ELECTION OF OFFICERS

The election of officers and directors resulted as on page 6.

BEAUTIFYING THE HIGHWAYS OF ONTARIO.

Henry J. Moore, Provincial Forester, Toronto.

No public work that is being done to-day can be of greater value than that of building good and beautiful roads. Good roads are necessary in order that people living along them may profit through being able to market their produce, or through having the market brought to their doors. Good roads will develop the Province as no other factor can, will make farm lands more valuable, and will thus encourage the practice of agriculture and the development of agricultural resources will encourage tourists to visit summer resorts. Tourists will bring in a lot of money. Good roads will thus advertise Canada as nothing else will for these people will tell others of the pleasant trip they made. Automobiles will be needed by Canadians to travel on these good roads. This will necessitate the making of the cars in Canada, and will thus encourage industry and employ a number of men now out of work.

What of the beauty? Once upon a time we were asked to believe that flowers, trees and shrubs, or in other words beauty, was a luxury. We now know that beauty is a necessity. It was placed upon this earth by the Creator because it inspired. Inspiration creates lofty ideals; gives men and women better thoughts; sets in motion all that is good in mankind. There are thus fewer bad people, fewer criminals in our jails, and fewer insane people in our asylums, consequently our tax rate is lower. If heredity and environment are the influences which mould the soul, what chance then has the child who does not inherit good, of becoming good, if his surroundings are not beautiful, cleanly and sanitary? No chance at all. What of some of the shacks we see along our highways? What of some of our highways themselves before improvement was effected? Only twenty-five per cent. of the entire two thousand miles was lined or otherwise planted with trees, only ten per cent. with proper spacing and alignment, and fifteen per cent. diseased, mutilated or out of proper line. It is time we saved the remnant. If our organizations do not seriously take hold of the job of saving the trees, and if we do not plant them, Ontario may become a Sahara. Why do not our streams run full in summer, and cover those boulders, or shall I say tombstones, monuments to our folly? Why are our smaller lakes drying up? Because we have destroyed the forests.

Some of our farm homes, not all, have never received a coat of paint since they were built, and never since the last trees of primeval growth were destroyed fifty years ago has any beautification been effected. Look at this one on the screen, neither tree, flower or shrub. The chickens left for town and do not go home to roost very often. Father and mother wonder why. No remembrance of beautiful home surroundings in the minds of these children! Father and mother perhaps did not know. It is our duty to educate such.

Through the medium of good and beautiful roads the light is going to shine into the dark places even into the hearts of the people, and the people of Ontario, many of them isolated from their neighbours are going to be brought into association with other human beings through the medium of good and beautiful roads.

Length of Highways.—The total mileage of Provincial Highways in Ontario is at present approximately two thousand. This does not include other roads of which there are thousands of miles. It is the aim of the Department of

Public Highways to make the forementioned two thousand, eighty-six feet in width, as it has been found that the ordinary sixty-six feet is too narrow for modern demands, as not only should the right-of-way be wide enough to accommodate the roadway and gutters, but also the main trunk lines of the telephone, and electric power and light, and last but not least to provide a planting space for trees and shrubs, and one which in course of time may be neatly boulevarded and made pleasing from an ornamental standpoint. About five hundred miles have been so widened or are in process of widening, and the cross section shows twenty-eight feet for roadway and eight feet for ditches on each side and twenty-one feet for poles (where necessary) and trees on each side. On such highways there is little danger of trees interfering with the telephone and power service, and so harmony from the useful as well as from the aesthetic standpoint must exist.

Method of Planting.—About every one hundred miles of highway constitutes a Residency, and is under the control of a Resident Engineer; such engineers have under their control a number of foremen and their gangs of men. During fall and spring when the road work is not in progress, these foremen and gangs carry out the planting as advised by the Forester, who instructs them in the selection and planting of trees and shrubs. The trees are largely selected from the bush lands adjacent to the highways, and being native are thus desirable for the purpose. Twenty-five cents per tree is paid to the farmers, and the work of hauling and lifting is paid for by the Department. The total cost of lifting, planting, staking and mulching is less than $1.25 per tree. In cases where especially fine well shaped and rare specimens such as oaks are required the cost is a little more. Recourse is also made to the nurseries for some trees and shrubs.

In purely country localities native trees only are planted, as it is the desire of the Department to keep the highways typically Canadian; such trees as the Red and White Oaks, Hard and Sugar Maple, Elms, White Ash, Black Walnut, Butternut, Native Chestnut, Basswood, and so on, are utilized. At the approach to the various municipalities exotic trees are also included and comprise Norway Maples, Oriental Planes, and other shade trees of recognized value.

The minimum spacing of trees is seventy-five feet in the rows which are located two feet from the boundary lines. With such spacing every tree has a chance of perfect development and as light and air have free access to the roadway, moisture does not remain thereon for any length of time to cause disintegration of the surface.

Special Beautification.—Wherever at intersections of the highways near towns small waste areas exist. these are beautified by trees and shrubs. Two such parks have already been laid out, one at Port Hope, and another at Cobourg, and where at the approaches to large municipalities special treatment is desired this is effected by the co-operation of the municipal authorities. Special grading of areas, and the planting of shrubs is effected by the Department of Public Highways, and such are maintained at the expense of the municipality. The easterly approach to the city of St. Catharines, which passes the beautiful and well-kept Victoria Lawn Cemetery, is shortly to be beautified in this way.

Legal Protection.—No injury to permanent plantations, or to existing trees is permitted, and a penalty provided by law is inflicted in the case of wilful damage or vandalism. No company or person may without permission

cut or remove a single branch. Needless to say that in the case of existing wires or cables any necessary and reasonable cutting is allowed, but only under the direction of an expert on the Provincial Highways of Ontario. The straying of cattle along the highway is also by law prohibited. However, generally, the law has so well been observed that no prosecutions have, up to the present, been necessary.

Reforestation of Waste Areas.—Not the least important of the work carried out by the Ontario Department of Highways is the reforestation of abandoned gravel pits and quarry areas. These wherever possible are reforested with seedling pines, or with other commercial trees. Steep banks, where considerable cutting or filling has been done by the engineers to reduce the grades are also landscaped or reforested as the case may be. As many of these areas are contiguous with the highway the educational value of the project will readily be understood. Motorists may readily see the planted areas without even leaving their cars. The Ontario Department of Forestry very kindly supplies the seedling pines from its nurseries.

Help to Residents and Institutions.—Ontario desires not only to beautify her highways, but also to assist residents living among them to beautify their property so that not only will the planting strip be beautified but the frontages of farm and suburban homes, school grounds and cemeteries. For this reason a plan will be supplied to all persons, who, having a real desire to improve their property, will undertake the work. Many such plans have already been prepared. Where such improvement is effected, the increased value of the property more than justifies the expense. One good turn deserves another and it has been extremely gratifying to find that in turn people have actually offered to undertake the maintenance of the Highway planting strip outside of their fence line.

Free Advice.—Not the least important of the activities of the Ontario Department of Public Highways is the giving of advice to County Road Engineers and Superintendents, and also to Municipal Councils, in the matter of selection of trees, pruning, planting and other matters pertaining to tree culture. Upon request lectures are given during the winter evenings in nearly all parts of the province on "Highway Beautification," "Landscape Art" and allied subjects. In these the Highways Department and the Department of Agriculture co-operate as far as compatible without the duties of one overlapping the other. It will readily be seen that any work which pertains to the beautification of the Highways and Farm Frontages must necessarily be of interest to the Department of Agriculture, and so through the Horticultural Branch of the latter, splendid co-operation is effected.

Beautiful Bridges.—Some of the new bridges constructed or under construction, span ravines which are nine hundred to one thousand feet wide. These bridges are largely of steel and concrete and of ornamental design, light and graceful, but sufficiently strong and rigid to carry all loads that the Department allows upon the highways. One has but to compare them with the bridges lower in the ravines which previously gave service, to realize the tremendous advance that has been made in the construction of highway bridges. Bridges are permanent features, and as such should be beautiful in design. When so they serve a great educational purpose and are objects to admire. Ontario is building such bridges.

Beautification is the highwater mark of civilization—beautiful highways, buildings and home surroundings. The good and beautiful roads of the Province of Ontario will stand as a milestone to her people who are yet unborn. Beauty along the way is an asset, the value of which the human mind cannot compute. Would that we all could see the beauty of trees, shrubs and flowers and of God's great rolling landscape, and understand its meaning.

A PROVINCIAL LIBRARY OF LANTERN SLIDES.

DR. J. M. BALDWIN, Toronto.

The necessity of a Provincial Library of lantern slides to further the educational work of our society is so self-evident, that it requires no advocacy on my part to support it. I will therefore confine myself to a few suggestions as to how it should be carried on. Our directors should appoint a secretary to take charge of the slides and catalogue them. They should also appoint a committee to pass upon the photographs submitted, decide on how they should be grouped, have lectures prepared to accompany each group. For instance, we could have a group supplied by Mr. Tomlinson, on the physiological life of the plant.

The Secretary in his report stated that he often received requests for speakers, whom he was sorry he was unable to supply. Now I don't know of a better way of increasing the membership of this society than this library of lantern slides, unless it be a provincial flower show moving annually from one district of the province to another.

The address of Mr. Moore this morning showed the necessity of improving the roadways in this Province, and we must increase our membership so that we can demand strong support for this work. With this Provincial Library of slides sent on whatever subject the society would want, the people would be educated. They could see what was done at St. Thomas and along the Provincial Highway, and at Kingsville. They would know what our roads were like and what improvements were made.

As to the financial side, the directors should set aside a portion of the Government grant annually for the upkeep and extension of this library. I am sure you will all agree with me that the money could not be spent to better advantage both for our Society and the province we love, the natural beauty of which has waited so long for protection and development.

MISS JESSIE DIXON, Hamilton: In our Society we have had the advantage of a good many speakers and we have always asked the question: "Have you any slides?" and we usually got the reply: "No." But we have felt that they would like to have said "Yes," and that they did not have all the slides they wanted, and had been unable to get them from sources they applied to. One of our members has commenced forming a collection of slides from material he had been able to get around our city. We have enjoyed the benefit of this very much, occasionally lecturers have said: "I could not get what I wanted." We in our society have set aside a small sum of money to make a beginning on this for our local work. And we have two or three objects in view—one is that the slides would provide an evening's entertainment if we could not get a lecturer, another

was that we felt that the coloring of the slides was a very weak point, that a good many of them that were shown were not at all correct, and in the cases of some flowers it is essential that they be so.

The benefits of a Provincial Slide Library would be that all the Societies would have the use of it. In the case of our own Society we would always be willing to have them go out, but it would be of much greater use if the Provincial Society had them. There is a great educational value in the colored ones. Some have been in black and white, and you can see that they do not please your eye or convey as much to you as those in color. Our idea is that only those diagram slides such as Mr. Moore showed us are the only legitimate ones for black and white. Another class of slides that you can secure in your own town is what is known as "Before and After." These are of the highest educational value for the societies, and the question is how to obtain these:

First—by donation. You may get the finished slide in the larger places. In days gone by, there used to be thriving photographic societies and many of you present may know of these in your own city. We had one at one time, and I am acquainted with about six or eight who are still interested in making photographs, who can make slides, and from them we had hoped to obtain negatives.

In the case of this Society each outlying society might send in photographs, negatives preferred, or film or glass.

About the making of colors: there is only one way to make correct colors and that is to go out in the garden and make your color notes at the time. Take your color box and a piece of good paper and go out and make them. You may not know anything about the mixing of colors, but I think you could get it close enough.

In regard to this color work, pupils in the public schools are taught Art Work. The purpose of this training as laid down by the Department of Education is to beautify and ennoble the pupil's life by sympathetic contemplation of nature, and to develop facility in use of Art as a means of expression. To those of you trying to give children a knowledge of horticulture, I would like to recommend the drawing and coloring of flowers as an aid in the work.

Dr. Baldwin: Some of the Government grants could not be spent to better advantage than in supporting this provincial library of slides, because they go over all the province and you get more for your money. He then moved, "That the Board of Directors appoint a Secretary and Committee to organize and establish a Provincial Library of Slides."

Geo. Simpson of Ottawa seconded the motion.

It was embodied in Dr. Baldwin's resolution that the securing of the lanterns be left to the discretion of the incoming Board of Directors, and the resolution was then put and carried.

Miss Dixon: Slides can be made from No. 2. Brownie negatives. Some of the slides shown here by Mr. Brown of Kingsville were made from these.

J. Lockie Wilson suggested that the different branches send in as many pictures as possible to the Department, and they would see that the Committee appointed get them to be made into slides.

F. C. Nunnick: I am very glad to be able to announce that in co-operation with the Horticultural Division of the Dominion Experimental Farms, the Di-

vision of Extension and Publicity of that society, of which I happen to be chief, we have been able to get together a collection of Lantern Slides on the subject of the planting and care of the home grounds, dealing particularly with rural conditions.

I have only been able so far to complete the preparation of six sets. However, if those six sets were kept working continuously all over different parts of Canada they would go a long way. Mr. Macoun and I have worked together in preparation of these slides, there are between 50 and 60 in each set. They show before and after effects where planting has been done, showing some houses before planting was done at all and the improved conditions and surroundings after trees, vines, shrubs, etc., were added to the house. With these sets of slides we purpose sending out prepared explanatory manuscripts, probably about 25 pages, which will occupy from three-quarters of an hour to an hour in reading. They run about one minute to the slide in that way. Each slide is described, whatever happens to be shown will be explained fully and clearly in the lecture, so that any person who wishes to read the lecture as the slides are projected on the screen will have the whole thing complete. Now those will be available to any society or organization where a lantern is available, they are available free of cost. The only charge will be the express charges one way. If you will pay the express charges when you get them, we will pay the express charges on return. And if you will write me, or the Department of Extension and Publicity, Experimental Farm, Ottawa, we will be pleased to accommodate you.

Mr. Nunnick then spoke a few words on the subject for which he was slated, namely:—"Co-Operation between Horticultural Societies and other Local Organizations in Community Improvement Work."

Rev. W. M. McKay: I made a mistake as Chairman of the Resolutions Committee. In the bundles of resolutions the following, which was duly passed by the resolutions Committee, was omitted.

Moved by Mr. Geo. Simpson, seconded by Mr. Clarke: "That the Ontario Horticultural Society in convention, following up the Resolution passed at previous meeting of Association approving of the formation of a Canadian Council of Horticulture, do hereby appoint a committee to confer with the Canadian Florists and Gardeners Association and suggest that the committee be: Messrs. Baldwin, Jaffray and Carter." Carried.

A vote of thanks was tendered to Sir Edmund Osler, for his kindness in inviting the members of the Association to see his greenhouses.

SYMPOSIUM ON THE IRIS.

Dr. Brethour, Toronto, then gave an interesting and instructive lantern talk on the Iris.

Moved by Mr. Carter, seconded by Rev. Dr. Scott, that a hearty vote of thanks be tendered the American Iris Society for their kindness in supplying the slides for our entertainment.

The President: The Toronto Society hopes to put on this spring an Iris show that will be comparable to the very fine Pæony Show they had in Toronto last year. In Mr. Macoun's report on Names and Varieties a recommendation

was made that certain shows might be officially recognized by the Association, at which novelties might be shown and endorsed by the Committee of Registration for Plants. I would very much like to move, as a delegate from Toronto, "That this convention considered it advisable that this iris show be considered the first official show." This was seconded by MR. GREEN, and carried.

REPORTS OF DISTRICT DIRECTORS.

DISTRICT NO. 4. THOMAS D. DOCKRAY, Toronto, DIRECTOR.

I wrote all the Societies in my district, urging them to hold their regular monthly meetings, suggesting timely subjects for discussion, and naming various experts whose services they might obtain by applying to the superintendent of Horticulture.

In view of the high prices and scarcity of nursery stock, I urged the Societies to make their arrangements for premiums as early as possible.

The claims of the boys and girls upon the Societies were pointed out and the necessity of having gardens for the children at home, at school and as plots in common.

The advantages of Exhibitions were enlarged upon, especially those where there were a large number of small prizes for the boys and girls.

In conclusion, I offered my services to the Societies, and some of them had me address them and judge at exhibitions.

Before the Canadian National Exhibition, I wrote the Societies about the exhibitions of flowers the Ontario Horticultural Association intended to make, and most of the Societies in District No. 4 sent in large boxes and crates of flowers.

I visited 12 of the 14 Societies in my District.

WESTON.—This Society, under Mrs. Lyons as President, held its meetings regularly and did a great deal for the general good of the Town of Weston in civic improvement, tree planting, community gardening, etc. Some of the boys and girls, who began their Horticultural studies under Rev. W. M. McKay, on the Community plots some years ago, have now finished at High School and are able to pick off prizes in the adult classes at the exhibitions, and to act as captains of certain divisions of community work themselves.

About the middle of March last, the Weston Horticultural Society opened its season by a lecture in the Town Hall to certain classes of the Public Schools, outlining the season's work for the boys and girls. Both parties to that meeting carried out the contract. That is the Society and the teachers in the schools did for the boys and girls of Weston what they promised to do. And the boys and girls carried out during the season what they were told to do at that meeting.

This Society also started a new line of work by having short lectures, of not more than fifteen or twenty minutes, in the factories, on such subjects as the spring cleanup, laying out a garden, improving home premises, etc.

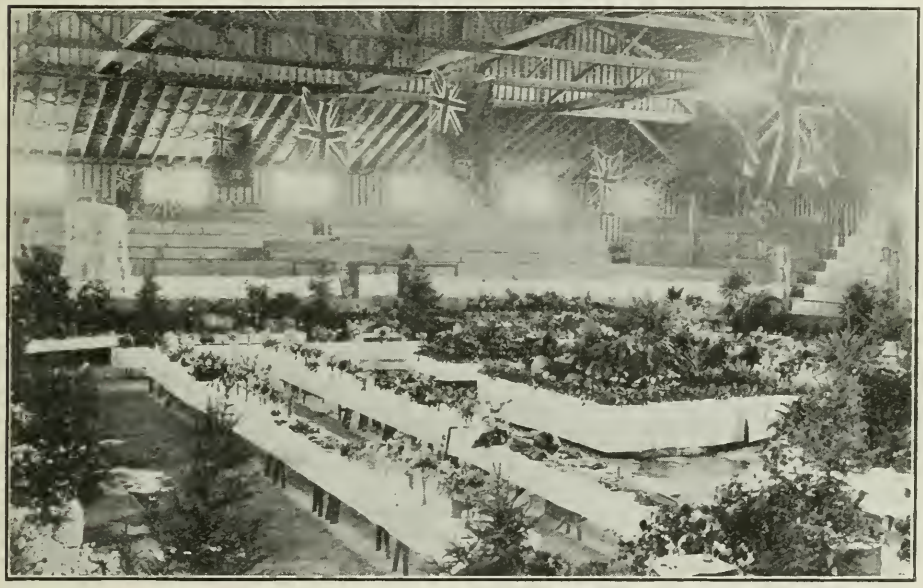
The usual fall exhibition was held and was the best Weston has ever had.

PORT CREDIT.—One of the events of this Society was an address in early April on the choosing, preparation and setting up of vegetables and flowers at exhibitions.

The Society also held two successful exhibitions, one in April for house plants and the other in September for flowers, fruits, vegetables, poultry, etc.

The Port Credit exhibition programme is the best I have seen, in the clearness with which the requirements of the exhibition are expressed.

Aurora.—In early April this Society held a banquet to celebrate the campaign for membership, which had been most successful. The prize lists of the Society were overhauled and brought up to date. Again the Society was given the hearty help of the principal and teachers in the school, and a further advance in quality and a number of exhibits in the children's classes at the fall fair was apparent. The flowers exhibited by the adults were also much in advance of those of the year before. A large number of members have learned to grow and what to show.



Fort William Horticultural Society's Flower Show, August, 1921.

Mimico.—This Society was organized in early April at a successful meeting. The matter had been well advertised beforehand and, although a free moving picture show was also going on at the Public Library, the enthusiasts came to the Town Hall and organized the Mimico Horticultural Society.

An Exhibition held in the fall was most successful. The boys and girls particularly excelled themselves in the number and high quality of their exhibits of vegetables, wild flowers, bouquets, etc. The exhibition being on "The Highway," the exhibits were gladly bought at good prices at the close of the show by the automobilists going by.

Richmond Hill.—This Society is fortunate in that the principal and teachers of the School recognize the importance of horticultural teaching and encouragement of the pupils. An address on gardening was given the senior pupils in the School with blackboard illustrations. And the same evening the Horticultural

Society had a lecture, outlining certain aspects of their work, and explaining what had been done for the boys and girls, and how the Society could forward that work.

In September a successful exhibition was held, nearly all of the classes being for boys and girls. Wonderful progress was shown in the quality of the vegetables. Many of the boys and girls chose and arranged their bouquets of asters splendidly. Some chickens, pigeons, and guinea pigs were shown, and served to keep the juvenile expectation at fever heat until the ribbons were awarded.

The Society also awarded prizes for best kept back yards, boulevards and window boxes. This will have the good effect of tidying up many an unsightly frontage on Yonge Street.

Toronto—held a pæony show. The date chosen was just at the right time and the hall could not be surpassed. It was the best flower show ever held in Toronto and has gained many enthusiasts for the culture of the pæony. The Society had a delightful lecture from Mr. W. T. Macoun, on the Iris and will next year make the Iris the grand feature of one of the exhibitions.

Mount Dennis.—This Society was organized last April. The inaugural meeting was not as well attended as it might have been owing to the heavy downpour of rain that prevailed all evening. But the Society is placed in a rapidly filling up district between Toronto and Weston, and there is a great deal of good work it can do in the three large, new schools in the neighborhood. Three hundred Norway Maple trees have been bought by the Society and will be planted on the streets. A strong campaign for membership will be put on next month.

Agincourt.—This Society, formed the year before, opened up its spring work by an address to the boys and girls in the new school. The principal and teachers were most helpful, and their work had its reward in the advance in the juvenile exhibits at the fall fair.

Whitby.—Just before the planting season, the boys and girls of the schools marched in procession to the Town Hall, carrying with them the blackboard that the lecturer of the afternoon used for his demonstrations. As many of the pupils come from the country around Whitby, this lecture must have had a far reaching influence.

In the autumn, a flower and vegetable show was held, almost entirely for the boys and girls, and a field day of sports and competitions.

All this splendid work for horticulture could not have been accomplished had not the principal and teachers in the Whitby schools given their hearty assistance.

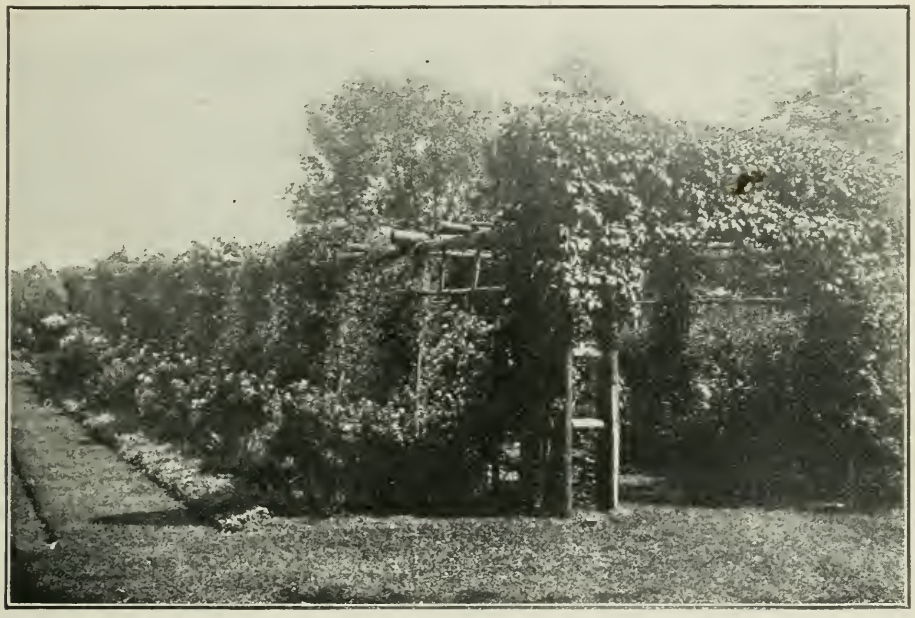
High Park.—This Society provided premiums for its members and held its meetings regularly, some of them with lectures or demonstrations on timely subjects. The usual exhibitions were held and in a residential district, where they would do most good.

Thornhill.—This Society has developed a juvenile branch. They run their own meetings, hold demonstrations in Thornhill gardens, and go visiting large gardens in other parts of the County and other Societies' Exhibitions. Largely through the advice and monetary assistance of the Junior Branch, rabbits and pigeons were put on the prize list of the Fall Fair.

The Society's Exhibition, in September, was a great advance on former efforts, both in number and quality of exhibits. Many automobile parties called in for tea and supper as the Thornhill Flower Show has become one of the well known September events in the vicinity of Toronto.

Riverdale.—This Society, the third in the City of Toronto, grew out of a vacant lot gardening club and for some time had difficulty in obtaining a charter owing to the restrictive wording of the Act at that time. But they just went ahead growing flowers and vegetables in their good, sandy soil over the Don, and are now a flourishing Horticultural Society.

They hold well-attended meetings in one of the fine schools in that part of Toronto, and last September held a good exhibition.



View of Pergola From Outside

In December they held a splendid banquet, attended by all the civic and Provincial notabilities. The Society is planning to make the East End hum, horticulturally, during 1922.

Brampton.—This Society has always held its own and never seems to need help from outside. The town itself has for years been a great place for flowers owing to the enormous conservatories where roses, carnations and bedding out plants are grown. Brampton is the Society farthest west on my ground.

Oshawa.—This Society distributed premiums and held at least one exhibition. Oshawa is the Society farthest east on my ground.

District No. 6—Wm. Hartry, Seaforth, Director.

Outside our own District.—In April of last year, I had the pleasure of officially organizing a Horticultural Society at St. Mary's; also at Watford, and both promise to be splendid societies.

I had the pleasure of addressing a meeting of horticulturists at London, and had a fine meeting.

In our own District.—Had a lot of correspondence with a number of our own societies, and secured bulbs for three of them. Attended the flower show held at Walkerton, and did the judging for them.

Addressed a public meeting in the evening, where we had an overflow meeting.

Visited Hanover the following day, and met a number of their officers and members.

In December accompanied the agricultural representative to Exeter to arrange for the starting of a society, and in January held a meeting and used a lantern and some seventy-five slides. Also gave an address. About seventy-five members were secured, and a vigorous society is launched.

The town of Wingham is seeking to have a society.

The town of Meaford has secured over sixty members, and will organize in April.

Our rural district, with but one small city, has fourteen societies and 2,200 members. Last year we spent about $6,000.00 on Horticulture.

District No. 7—J. E. Carter, Guelph, Director.

District No. 7 includes Brant. Waterloo and Wellington, and contains fourteen societies with a total membership of 4,936, an increase of one society and 598 members for the District for the year.

Brant County has two societies with 1,167 members.

Waterloo County has seven societies with a membership of 1,980.

Wellington County has five societies with a membership of 1,689.

During the year, four societies showed a loss in membership and ten showed an increase. Galt made the largest increase, 181 members. Ayr came next with an increase from 72 members in 1920 to 180 in 1921. Preston is a new society and from every indication will soon be one of the largest in the district, last year it showed a membership of 228. Hespeler Society formerly had many members residing in Preston, and when the Preston Society was formed these members naturally joined the Preston Society; notwithstanding this, Hespeler showed a splendid increase of 45 members. Guelph is the largest society in the district with 1,100 members.

The societies in the district held fourteen exhibitions of flowers, fruit and vegetables, besides giving Ribbons of Merit and a number of silver cups. $1,821.00 was paid in cash prizes, $2,735.96 was paid out for Premiums for the members in the district. $1,247.60 was spent on civic improvement.

Guelph and Palmerston Societies held a Decoration Day, flowers were placed on the soldiers' plots in the cemetery and on the monuments erected in honor of our boys who fell in France and Flanders. As Director of District No. 7, I would recommend each society to perform this honor once a year. It is a work that fills in well with the aims and objects of our organization.

Rockwood Society takes care of the grounds around the Soldiers' Monument. The Guelph Society has planted with shrubs and flower beds the large soldiers' plot at the cemetery.

Elora and Guelph Societies held a Bird House Exhibition, and a large number of splendid bird houses were exhibited by the boys and girls. This particular work is a commendable one, and I hope to see more societies take it up.

The Brantford Society did splendid work by planting eight beds of tulips, perennial and rose beds at the Sanitarium and supplied the schools with a large amount of ivy, shrubs, perennials, etc., also rose bushes to the hospital.

This is a lesson to all societies. not how much our members can get out of the society, but how much can members do for others.

Galt Society spent considerable on their schools.

The Elora Society is doing splendid civic work. They had nine flower beds and many window boxes on the public buildings.

Your Director visited and gave a talk on horticultural work to the following societies: Galt, Preston, Hespeler, Rockwood, Fergus, Elmira and Palmerston, and also judged at the Flower and Vegetable Exhibition at Elora.

I have applications from a number of townships asking that societies be formed. We in the towns and cities must encourage the rural sections of the province to take up the work, and thus help to make life on the farm more pleasant, by beautifying the homes on the farm, also to encourage a more generous planting of shade trees along the roads.

District No. 9—J. E. Brown, Director.

Owing to a destructive fire which occurred about the middle of May, necessitating considerable extra work at a time I intended making a personal visit to all the societies in my district, I was prevented from doing so, but received favorable replies from the societies in the district of the valuable work being done in every city and town where our societies are established, and in every case planning of greater work in the coming year is the slogan.

Chatham is our banner society, with a membership of 1,040 active members, splendid receipts of $5,149, and expenditures of $4,601, leaving them a net surplus of $548 to commence the spring work with. One of the striking features about this society is that the work of distributing the large number of options and local improvements and looking after the work which is required to be done with over one thousand members, at a cost of only $50 for secretary's salary, is deserving of special mention.

Walkerville reports a membership of 210, an increase of 54 over 1920. They distributed over seven thousand bulbs and roots consisting of Gladioli, Tulips, Pæonies, Hyacinths, Narcissi and green-house plants, and a quantity of English and Canadian roses. The English roses were very disappointing as they were small, mouldy and inferior stock.

The Windsor Society has taken on new life, having selected new officers and working in conjunction with the Park Board in the beautification of the city grounds. They report a membership of 424 members and distributed 546 Rose bushes, 18 Hardy Lily Bulbs, 480 Hardy Mums, 3,200 Gladioli besides a large number of plants and flowers. All officers are working without salary.

Ridgetown has a membership of 174, an increase of 64 over 1920. Receipts $691.00—Expenditures $564.00.

The historic town of Amherstburg reports considerable progress. Membership increased eighty-one per cent. and receipts one hundred and sixteen per cent. New flower beds have been planted and their importation of bulbs direct from Holland has given great satisfaction as to size and quality. The citizens are looking forward to seeing the best civic beds of tulips, daffodils and narcissi that have ever been grown in the town.

Rodney reports increased interest in their society and they are working through committees—School and Cemetery, Park and Town Hall. Old time residents returning on a visit to their town remark on its improved appearance, all effected through the Horticultural Society.

Bothwell reports considerable work for so small a membership. Here is a good field for some of our lecturers to pay a visit and help to create more interest for a town of its size.

The village of Wheatley is fortunate in having such an able leader in the person of Mrs. R. W. Leader; although handicapped by the town not having any water works, still she has succeeded in ten years in transforming the appearance of their town. Her Rose Garden is the admiration of visitors and tourists. The town people are ably assisting her in the cultivation of climbing roses, verandah boxes, vines and tulip beds, and they are planning for a tulip show, and will start their spring work with extra energy and further plans.

Harrow is a new society, organized last April with a good staff of enthusiastic workers. They made a good start last year and beautified their streets with flower beds, shrubbery, etc., and closed the year with 89 members and a cash balance of $92.00.

Leamington organized in 1920 and is doing excellent work and considerable interest is manifested by the citizens as they were favored with illustrated lectures by Dr. Bennett and Mr. Moore on the cultivation of roses. Their membership was increased from 184 to 328 last year. Leamington can be congratulated upon their work last year and for a new society receipts of $968.00 are very creditable.

Sarnia Society reports progress over 1920 with increased membership, who are doing commendable work along horticultural lines, and are planning to put on a Flower Show this year which no doubt will stimulate renewed interest in horticultural beautification of their town, which is so essential in a frontier town. They have increased their sale of plants and bulbs over one hundred per cent.

Kingsville Society is increasing its value to a place of its size, as a summer resort, located as it is on Lake Erie. Nearly all, especially those who own their own homes, have beautified their homes with shrubs, vines and flower beds. The Society maintains about thirty beds on corners of streets, Town Hall, Park and churches. We have a tulip show every year, and it has become the event of the season, so much so that about forty to fifty thousand tulips, hyacinths, narcissi and daffodils were planted last fall. Besides our tulip show, we are planning for a gladioli show next August. The receipts for the year 1921 were $1,565.00, which is an average of about $5.00 per member. A strong committee was appointed to increase our membership to five hundred this year.

Every society from which I have heard reports increased interest and the receipts are very largely utilized in helping to beautify their respective towns by cleaning up unsightly places, maintaining flower beds on streets, public buildings, grounds and cemeteries. Some of our towns should have a much larger member-

ship. Help in this connection could be given them by outsiders, who would give them their time and be paid expenses by the parent society. Town Councils could be more generous in their grants, seeing that in nearly every case the officers of the society give their time and work gratuitously.

CO-OPERATION.

F. C. Nunnick, Ottawa.

The speaker gave an interesting account of the application of co-operative principles between some of the eastern Ontario Horticultural Societies and other local interests.

The Ottawa Society was co-operating with the City Council in the matter of street tree planting, and also with the Ottawa Improvement Commission in developing a joint nursery. Horticultural work has also been done in connection with the Central Canada Exhibition Association, by holding special classes for members of the Society.

Co-operative work has been effected through smaller organizations, such as assisting in a Red Cross Day with the Morrisburg Society. In Iroquois the schools and the Horticultural Society were working together to good advantage. Very satisfactory work had also been done in Winchester in assisting in the improvement of church and school grounds. In Brinston the local Community Association and Horticultural Society are working together for the improvement and beautification of the newly acquired Memorial Park.

Work has also been done between the Ottawa Horticultural Society and Kiwanis, Rotary and Women's Clubs, especially in the local membership campaign.

WHAT RELATIONSHIP SHOULD EXIST BETWEEN THE AMATEUR AND PROFESSIONAL GARDENER?

W. E. Groves, Hamilton.

I am a member of the horticultural profession, working at it almost every day since I left school, before I was thirteen years old. During all the years I have been in close association with the gardener both in the old country and in Canada, and if I say I know something about his condition and outlook, his environment and his aspiration it is but a bare statement of fact. For some time I have been a modest official of the only national organization of professional horticulture existing in this country, and not being either idle or unobservant during that time I am perhaps entitled to speak with some authority in that connection. I know something about every Society in my district. I know too, something about some societies struggling on with no Department fathering, with no outstretched hand to help and unable to make any real progress for lack of some unselfish and sympathetic help on the part of societies more favorably situated. I have yet to utter my first word against a Horticultural Society's principles and aims, even though I may say something about methods.

My conception of what is expected of me, is just what kind of association might be between the organized amateur and the organized professional. On the principle that outlook is only possible in the light of retrospect, or that vision is quickened only by a real consciousness of the present and actual, I would like to analyze briefly the position as I see it to-day. Your report for the year 1920 is called the fifteenth and I do know that societies have been in operation for more years than these figures suggest. There must be at present nearly, if not quite, one hundred and fifty societies with an average membership of at least two hundred. The organization as I see it is accomplishing much that is valuable and vital to the progress of civilization. The societies are without any doubt doing splendid work in the wise education of a growing people in the art of beautifying homes and surroundings. In some districts valuable municipal work is being done.

I now look at the other side and try to place on record the viewpoint of the class I more particularly represent. Of necessity much smaller in numbers, even though every one were organized, of necessity unable to make himself heard so easily, the present day gardener is a rather disappointed member of society. Some of you may be inclined to say that if he had more spirit he would be in the ranks. I reply that the average horticultural worker is a man who loves beauty, and beauty and bolshevism are as far apart as the poles.

Then I think we should stand in such relation to each other that we could more often be of assistance to you in your own districts. This idea is not new. From the manuscript of an address to my own society two years ago I quote: "Horticultural societies have come to stay, and though there may at times have been some misgiving regarding their methods this has largely died out."

In the same connection may I speak of the work of those who try to serve with their gift of writing. This is one of the directions in which, whether we would or not, it is impossible to get along without each other. And yet how few of us use the gift we have for the good of the great object we have in view. It would be easy to name some men who are every week of their lives almost writing their hearts out in the effort to preach the glorious gospel of beauty, men who in the daily press, the weekly magazine, in our own *Canadian Horticulturist* are unceasingly giving (I say "giving" advisedly) of their very best of brain and mind and heart for the good of horticulture. It would be equally easy to name others who have the gift and the time and I sometimes ask why they do not take their place in the ranks and for the love of the work and the good of their fellow men do something in this direction. The columns of the press are open everywhere to educational matter. What the people are craving for is to be just plainly told how to increase the beauty of the homes in which they live. and how to help lift up the community in which God has placed them. Could not our thoughts in this direction cover our attitude to the only amateur gardening paper published in Canada, and could we not by this gift of expression of which I have spoken make it still more useful, and then could we not boost its circulation by the thousand?

The great Forestry Departments are urging in every direction the necessity for planting and yet more planting. This is a matter that sooner or later is going to affect seriously the economic life of the people and for that reason alone should be taken in hand. Again I insist that we could do far more good were we together on this question. I would like to see a strong committee

appointed to consider the possibility of a Provincial Arbor Day, when from our schools as a central point the planting idea might radiate out into the homes and public places, a day on which the children, into whose hands will quickly fall the destinies of this great Dominion, could be taught by demonstration and instruction something fresh about the miracles of growth. The grounds of our city schools are by no means anything to be proud of, and there is here a great field for united effort.

One other thought. There is a great work waiting to be done in every town and village, the work of going out into the highways and byways with this great gospel of beauty. To many it is heartbreaking to contemplate the east ends of so many of our great cities and note the ugliness of the streets, the monotony of the dwellings and the utter desolation of so many of the garden lots. We are sometimes tempted to ask why all this exists. And yet is it not a fair question to put to ourselves, would there be less of the ugliness and more of the environment that makes for contentment were we half alive to our work in the world? Were we more unselfish, did we but partially realize the truth of that second great commandment "Love thy neighbour as thyself" and act up to the realization, how long would it be before our towns put on a different appearance? The days in which we are living demand our very best thought and effort, and could not your army and that other army I so poorly represent stand shoulder to shoulder, heart to heart, in spreading the evangel of a clean, sweet, fragrant home life?

J. F. Jaffray: I think it has been the experience of all of us that the active membership of a Horticultural Society is the best friend of the professional gardener, financially and otherwise, and the 35,000 members of our Association require to purchase bulbs and plants and flowers from those who grow them, and where are these products to be procured? Only, I take it, from those who can supply the best varieties at the most reasonable rates.

Rev. W. M. MacKay: I was wondering in the midst of that splendid address and appeal for love and co-operation, if we might co-operate a little more definitely, in that institution of love that was organized a few years ago. (I refer to Mothers' Day), so that the price of carnations would not be made prohibitive. Is it fair that an organization like ours which was largely responsible for the introduction of Mothers' Day should find that we are held up by the almost extortionate prices demanded by professional gardeners for the flowers selected for the commemoration and honoring of that day?

This is one instance, and there might also be more co-operation in the matter of that ceremony that is connected with the laying to rest of our beloved dead. How is it that it is such a prohibitive thing for the one in average circumstances to have what perhaps the professional undertaker would describe as a "decent funeral?" It makes some of our hearts sick and sore when we look at the awful expenditures that are necessary to have a few flowers in connection with the laying to rest of our beloved dead. We might co-operate a little more clearly and actively along those lines.

We are not ready, I think, as an Association, to do anything offensively towards our commercial men, but there is one thing I for one will not stand for, and that is the commercializing of every blessed thing that we inaugurate for the good of the community. You know perfectly well that the great bane of all our civilizing effort has been the commercializing of it, and we know that not only the heavens above but the earth beneath and hell itself has been commercialized by some of us.

Now we are not all against any legitimate phase of commercial life. It is a part and parcel of our society, but what I do say is that we want fair dealing all round in the interest of the community, and it is the good of the community that we want first and foremost, even ahead of the interests of commercial florists. They are necessary, and I would not for a moment eliminate them from the industrial situation in which we live and move and have our being, but what I do say is that we will not lend ourselves to be advance agents for allowing recommendations of one kind or another to go, in an abnormal and unreasonable extent, into the commercializing of the forward movements led by us. A hint has been made with regard to two of our Societies. With regard to any of these Societies, what are they doing? Is any individual becoming rich out of these activities? That is the question. Are the accounts of those Societies audited properly? If not, the Government has a right to step in and demand a right audit. Is the money from the Government expended for educational purposes as defined in the Act regulating our endeavors? If they are in it to fill someone's pocket, then there is something wrong. But there is no charge against the Society, because they develop zeal for progressive work: there is nothing against the Society if they do work on a large scale if the principle is right. There is nothing in the violation of the Act or violation of the spirit of it in what is being practised on a small scale by a small Society or on a large and even world-wide scale by a large Society, so long as they are not utilized for self-aggrandizement, but for the public good.

As your newly elected President, I wish to place myself on record with the rest of the members of our Association and say that so far as I am personally concerned, we are ready to co-operate for the good of the community in every way that can be shown to us to be reasonable, sane and really unselfish.

H. J. Moore, on behalf of Mrs. Powell, of Ridgetown, announced to the Convention that there is to be established an agricultural experimental farm there and the people of Ridgetown and all the Societies around sent in a petition to the Government to have a School of Horticulture attached to that farm, and they wanted this matter brought up at the Convention.

The largest and most enthusiastic Convention ever held was then brought to a close by the singing of the National Anthem, and the delegates then visited the beautiful greenhouses of Sir Edmund Osler, where they were most cordially received, and after viewing the magnificent display of flowers were invited by their kindly host to partake of the refreshments provided.

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1920-22.

Societies.	Expenditure in 1921, on which grant for 1922 is based.	Membership.		Legislative grants.		
		1920	1921	1920	1921	1922
	$ c.			$	$	$
Acton	316 10	174	217	76	81	74
Agincourt	256 12	98	102	47	45	48
Almonte (organized in 1921)	179 78		138	.....	75	44
Alvinston	103 13	61	52	41	28	21
Amherstburg	1,235 41	77	140	90	91	176
Aurora	716 33	203	498	95	139	169
Aylmer	1,054 41	132	176	178	210	159
Ayr	413 30	72	180	71	58	80
Barrie	654 98	327	319	119	177	133
Beamsville (organized in 1921)	168 79		112	.....	75	40
Blenheim & Harwich	625 87	358	242	120	183	117
Bothwell	128 34	64	65	34	49	26
Bowmanville	227 92	106	153	44	50	52
Brampton	358 94	179	172	87	84	72
Brantford	1,373 30	886	782	594	444	296
Bridgeburg (organized in 1921)	484 70		161	.....	75	86
Brooklin (organized in 1921)	73 67		47	.....	47	17
Brussels	159 67	100	66	59	48	31
Burlington	301 84	136	123	75	58	57
Cardinal (organized in 1921)	170 04		80	.....	75	34
Carleton Place	586 44	142	186	135	90	103
Chatham	4,601 28	783	1,152	800	800	759
Chesley	267 99	116	90	75	52	47
Chesterville	259 35	94	146	65	46	55
Clifford	699 68	136	148	212	139	111
Clinton	419 98	274	197	233	155	84
Creemore (organized in 1921)	154 44		91	.....	75	34
Delhi	196 10	64	80	64	37	37
Dresden	347 66	56	111	55	23	61
Dundas	1,125 81	78	271	84	117	183
Durham	138 72	64	51	49	44	25
Dutton and Dunwich	537 19	134	186	112	131	97
Elmira	345 36	102	134	57	69	64
Elora and Salem	938 13	245	231	111	170	155
Essex	296 69	75	73	91	69	49
Fenelon Falls	212 43	76	56	46	55	36
Fergus	349 71	136	186	54	79	73
Fort William	1,986 46	1,116	1,204	145	552	441
Galt	1,737 38	416	574	190	325	309
Gananoque	485 84	127	377	75	85	120
Georgetown	414 36	167	134	75	102	72
Glencoe (organized in 1921)	165 19		87	.....	75	35
Goderich	211 35	140	145	88	67	49
Grimsby	473 03	93	147	46	74	83
Guelph	3,057 85	1,026	1,080	692	633	555
Haileybury	416 51	67	77	81	67	64
Hamilton	2,286 28	921	1,002	515	501	445
Hanover	779 94	302	336	216	190	151
Harrow (organized in 1921)	169 14		89	.....	75	35
Hastings	377 32	92	140	75	43	69
Hespeler	421 84	166	211	106	112	86
Highgate (organized in 1921)	159 98		92	.....	75	35
High Park	925 19	464	549	230	240	203
Hillsburg	308 47	67	62	75	62	49
Ingersoll	1,309 13	161	139	364	292	185
Iroquois	390 31	152	200	72	92	80
Iroquois Falls (organized in 1921)	771 90		98	.....	75	112
Kemptville	555 23	143	319	75	76	120
Kingston	413 62	251	174	.....	119	79
Kingsville	1,380 67	315	249	189	300	212

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1920-22.—Cont.

Societies.	Expenditure in 1921, on which grant for 1922 is based.	Membership.		Legislative grants.		
		1920	1921	1920	1921	1922
Kitchener	1,287 27	501	538	326	318	247
Leamington	903 28	184	328	75	78	165
Lindsay	1,990 15	272	213	353	372	282
Listowel	576 95	65	80	76	71	85
London	2,378 82	975	1,683	800	726	566
Markham	317 44	67	135	67	35	60
Matilda Tp. (organized 1921)	129 86	.....	103	.....	75	32
Midland	197 10	162	136	75	54	46
Milton	229 68	128	132	72	67	49
Mimico (organized in 1921)	738 41		361	.....	75	150
Mitchell	215 20	103	110	49	56	45
Mount Dennis (organized 1921)	40 90		86	.....	.....	19
Morrisburg	960 53	178	313	245	119	170
Napanee	205 47	63	63	45	43	35
Newcastle	388 04	269	132	52	137	69
New Hamburg	129 35	70	50	37	37	24
New Toronto	738 61	109	156	133	119	118
Niagara Falls	873 62	669	587	453	309	204
North Bay (organized 1921)	285 52		132	.....	75	56
North Blenheim	301 23	47	61	44	19	47
Norwich (organized in 1921)	258 39		112	.....	75	51
Orangeville	205 09	135	88	96	93	39
Orillia	453 48	.....	250	.....	.....	96
Orono (organized in 1921)	195 74		123	.....	75	44
Oshawa	429 01	162	375	83	77	113
Ottawa	3,149 41	1,536	1,527	800	800	637
Owen Sound	1,633 01	179	408	205	158	269
Paisley (organized in 1921)	77 44		58	.....	58	18
Palmerston	444 29	138	108	75	82	72
Paris	1,036 67	365	385	233	194	191
Paris Road (organized 1921)	67 58		28	.....	28	12
Perth	601 85	287	235	159	147	113
Peterborough	652 04	159	348	207	95	137
Petrolia (organized in 1921)	471 43		131	.....	75	81
Port Credit	407 49	52	152	41	51	75
Port Dover	223 05	112	123	101	66	48
Port Hope	.....	106	.....	67	54	50
Prescott	316 13	146	140	105	105	61
Preston (organized in 1921)	592 34		224	.....	75	110
Richmond Hill	166 24	97	87	36	47	35
Ridgetown	564 79	110	174	75	55	98
Riverdale	582 81	104	129	75	71	93
Rockwood	301 15	96	72	75	59	49
Rodney	429 03	96	87	75	76	68
Russell	70 99	42	67	33	20	20
St. Catharines	4,065 70	1,119	1,345	697	735	723
St. George (organized in 1921)	309 65		106	.....	75	56
St. Mary's " "	381 21		228	.....	75	83
St. Thomas	20,761 60	1,567	2,046	800	800	800
Sarnia	1,383 64	147	274	75	109	217
Seaforth	748 82	205	221	160	177	128
Smith's Falls	450 85	119	103	82	102	72
Smithville (organized in 1921)	103 88		101	.....	75	29
Southampton	422 87	127	128	75	52	72
South Norwich	292 25	106	117	56	65	53
Stirling	189 13	98	100	60	54	39
Stratford	1,990 71	903	884	551	428	389
Strathroy	459 80	319	370	160	142	116
Thornhill	278 35	50	50	66	50	42
Tillsonburg	727 23	89	181	31	68	121
Toronto	1,444 28	408	534	700	300	265
Trenton	1,911 65	225	394	75	271	302

STATEMENT OF MEMBERSHIP AND LEGISLATIVE GRANTS FOR 1920-22—Cont.

Societies.	Expenditure in 1921 on which Grant for 1922 is Based.	Membership.		Legislative Grants.		
		1920	1921	1920	1921	1922
Wales (organized in 1921)	125 19		90	.....	75	29
Walkerton	431 47	177	232	78	98	91
Walkerville	608 59	156	210	168	108	210
Wallaceburg	1,049 63	303	336	352	287	185
Walton	298 81	112	147	75	77	61
Waterloo	303 55	85	109	87	71	55
Watford (organized in 1921)	320 40	.....	99	.....	75	56
Westboro	572 28	211	320	133	123	122
West Lorne	195 28	77	55	75	58	33
Weston	2,702 79	851	1,846	768	576	632
Wheatley	788 66	68	84	88	62	111
Whitby	219 96	101	104	40	52	44
Wiarton	94 07	80	81	.....	49	25
Winchester	398 01	285	160	148	153	75
Windsor	1,035 58	211	424	496	176	197
Woodstock	1,191 96	312	350	187	194	205
Total	112,131 32	28,029	37,357	17,644	19,587	17,881

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1921

Societies.	Legislative grant.	Municipal grants and donations.	Members' fees.	Gate Receipts at exhibitions.	Total actual receipts.	For exhibitions.	For seeds, bulbs and plants and Civic Improvement.	Lectures and periodicals.	Officers' salaries.	Total actual expenditure.
	$	$	$	$	$	$	$	$	$	$
Acton	81	.....	217	.....	306	.....	232	71	.....	316
Agincourt	45	.....	102	26	272	6	*12 195	22	.....	256
Almonte	75	12	138	.....	237	.....	136	5	.....	179
Alvinston	28	.....	52	.....	125	.....	96	.....	.....	103
Amherstburg	91	125	140	.....	1141	.....	1,189	.....	25	1,235
Aurora	139	131	498	2	775	182	221	22	.....	716
Aylmer	210	.....	176	.....	1,116	.....	798	5	111	1,054
Ayr	58	82	180	169	544	141	77	19	25	413
Barrie	177	55	319	44	620	93	314	25	50	654
Beamsville	75	29	112	9	233	32	59	44	.....	168
Blenheim and Harwich	183	85	242	.....	870	.....	575	19	.....	625
Bothwell	49	25	65	.....	91	.....	115	.....	10	128
Bowmanville	50	.....	153	.....	231	.....	221	.....	.....	227
Brampton	84	.....	172	.....	367	.....	211	12	.....	358
Brantford	444	125	783	.....	1,351	.....	871	.....	300	1,356
Bridgeburg	75	62	161	.....	494	.....	*72 378	20	.....	484
Brooklin	47	5	47	.....	120	.....	59	.....	.....	73
Brussels	48	.....	66	.....	161	2	119	8	10	159
Burlington	58	9	123	.....	317	26	195	1	.....	301
Cardinal	75	.....	80	.....	193	.....	168	.....	.....	170
Carleton Place	90	34	186	32	563	74	404	.....	50	585
Chatham	800	1,500	1,152	.....	4,906	.....	1,916	6	50	4,601
Chesley	52	.....	90	.....	255	.....	.....	5	.....	267
Chesterville	46	4	146	.....	248	.....	208	.....	18	259
Clifford	139	15	148	200	710	382	.....	.....	30	699
Clinton	155	46	197	.....	441	.....	406	.....	.....	419
Creemore	75	12	91	22	205	16	106	.....	.....	154
Delhi	37	.....	80	.....	204	.....	169	15	.....	196
Dresden	23	.....	111	.....	312	.....	221	.....	.....	347
Dundas	117	279	271	.....	1,166	.....	950	92	25	1,125
Durham	44	.....	51	.....	139	.....	90	1	30	138
Dutton and Dunwich	131	99	186	.....	432	.....	335 *4	.....	50	537
Elmira	69	67	134	27	371	63	187 *12	14	10	345
Elora & Salem	170	37	231	39	795	140	527	.....	25	938
Essex	69	150	73	.....	381	.....	136	37	100	296
Fenelon Falls	55	86	56	.....	217	.....	200 *42	.....	.....	212
Fergus	79	55	186	46	376	146	86	.....	15	349
Fort William	552	50	1,204	573	2,402	131	134 *104	3	270	1,986
Galt	325	250	574	51	1,905	203	1,138 *32	9	100	1,737
Gananoque	85	32	377	52	600	55	178	123	.....	485
Georgetown	102	150	134	.....	439	.....	329	.....	.....	414
Glencoe	75	.....	87	.....	241	143	10	.....	.....	165
Goderich	67	56	145	.....	277	.....	159	.....	20	211
Grimsby	74	115	147	61	523	49	285	54	.....	473
Guelph	633	500	1,080	439	3,026	276	1,371 *64	179	.....	3,057
Haileybury	.....	114	77	113	355	191	.....	.....	50	416
Hamilton	501	251	1,002	381	2,331	338	794	51	150	2,286
Hanover	190	50	336	23	780	44	566	6	20	779
Harrow	75	.....	89	.....	252	.....	136	.....	.....	169
Hastings	43	56	140	.....	348	.....	208	11	.....	377

* For lawns and gardens

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1921.—Continued.

Societies.	Legislative grant.	Municipal grants and donations.	Members' fees.	Gate Receipts at exhibitions.	Total actual receipts.	For exhibitions.	For seeds, bulbs and plants and Civic Improvement.	Lectures and periodicals.	Officers' salaries.	Total actual expenditure.
Hespeler	112	147	211	82	369	29	196	93	28	421
Highgate	75	.....	92	.....	248	103	.....	.....	.....	159
High Park	240	5	549	.....	991	109	485	57	55	952
Hillsburg	62	20	62	107	267	170	21	.....	15	308
Ingersoll	292	.....	139	.....	1,221	.....	804	.....	300	1,309
Iroquois	92	20	200	.....	395	37	*1 285	7	.....	390
Iroquois Falls	75	543	98	10	843	313	*180 63	63	50	771
Kemptville	76	65	319	.....	537	30	*25 391	.....	.....	555
Kingston	119	.....	174	25	318	215	.....	34	50	413
Kingsville	300	194	249	.....	1,565	26	*15 976	.....	100	1,380
Kitchener	318	253	538	174	1,320	285	*68 397	7	100	1,287
Leamington	78	75	328	.....	870	.....	834	20	.....	903
Lindsay	372	1194	.....	.....	2044	.....	*80 1,788	.....	30	1,990
Listowel	71	50	80	.....	583	....	450	16	25	576
London	726	40	1,683	.....	3,425	.....	.....	637	273	2,378
Markham	35	60	135	39	342	34	*8 97	69	.....	317
Matilda Twp	75	.....	103	.....	215	.....	102	.....	.....	129
Midland	54	.....	136	.....	290	.....	182	.....	.....	197
Milton	67	.....	132	.....	257	.....	*40 137	4	15	229
Mimico	75	200	360	82	753	155	168	39	50	738
Mitchell	56	25	110	.....	229	.....	171	.....	25	215
Mount Dennis	.....	45	86	.....	131	.....	29	.....	.....	40
Morrisburg	119	20	313	.....	887	102	*35 602	32	20	960
Napanee	43	101	63	.....	216	25	124	22	25	205
Newcastle	137	.....	132	.....	359	.....	241	.....	.....	388
New Hamburg	37	25	50	22	135	58	37	.....	.....	129
New Toronto	119	304	157	.....	691	152	*245 160	.....	.....	739
Niagara Falls	309	100	587	.....	996	.....	785	.....	.....	873
North Bay	75	.....	132	.....	307	.....	238	.....	.....	285
North Blenheim	19	.....	61	56	298	49	180	5	.....	301
Norwich	75	.....	112	75	338	.....	221	12	.....	258
Orangeville	93	.....	88	.....	223	155	.....	.....	25	205
Orillia	.....	.....	250	.....	497	.....	*216 198	.....	.....	453
Orono	75	.....	123	.....	199	.....	158	.....	10	195
Oshawa	77	.....	375	.....	456	.....	373	.....	12	429
Ottawa	800	751	1,527	.....	3,300	320	*227 1,466	.....	250	3,149
Owen Sound	158	166	408	17	1,554	233	1,142	67	.....	1,633
Paisley	58	.....	58	.....	91	.....	67	.....	.....	77
Palmerston	82	26	107	.....	401	.....	*3 239	40	.....	444
Paris	194	.....	385	28	913	244	658	.....	.....	1,036
Paris Road	28	.....	27	.....	84	.....	54	.....	.....	67
Perth	147	43	235	.....	611	.....	452	9	.....	601
Peterborough	95	122	348	.....	599	23	*40 340	35	100	652
Petrolia	75	30	131	.....	577	.....	421	16	.....	421
Port Credit	51	172	152	.....	400	173	47	27	.....	407

* For lawns and gardens.

ACTUAL RECEIPTS AND EXPENDITURE OF HORTICULTURAL SOCIETIES IN 1921.—Continued.

Societies.	Legislative grant.	Municipal grants and donations.	Members' fees.	Gate Receipts at exhibitions.	Total actual receipts.	For exhibitions.	For seeds, bulbs and plants and Civic Improvement.	Lectures and periodicals.	Officers' salaries.	Total actual expenditure.
Port Dover	66	47	123	.....	275	.....	88	69	50	223
Port Hope	(Returns incomplete.)									
Prescott	105	.....	140	.....	351	.....	298	.....	.....	316
Preston	75	25	224	42	637	52	302	91	.....	592
							*20			
Richmond Hill	47	19	87	.....	161	94	7	8	.....	166
Ridgetown	55	50	174	.....	647	.....	517	15	.....	564
Riverdale	71	32	129	27	630	133	27	16	41	582
Rockwood	59		72	.....	317	...62	209	.....	.....	301
Rodney	76	19	87	.....	430	.....	394	.....	.....	429
Russel	20	.....	67	.....	90	...	61	4	.....	70
St. Catharines	735	924	1,345	258	3,977	817	984	28	675	4,065
St. George	75	25	106	.....	247	.....	239	.....	.....	309
St. Marys	75	.....	228	.....	451	.....	*32	.....	.....	381
							348			
St. Thomas	800	3,253	2,046	.....	20,473	.....	10,753	1,330	2,162	20,761
Sarnia	109	.....	274	.....	1,435	.....	1,107	.....	.....	1,383
Seaforth	177	.....	221	.....	736	.....	567	5	.....	748
Smith's Falls	102	302	103	.....	507	44	360	.....	.....	450
							*10			
Smithville	75	.....	101	.....	176	.....	93	.....	.....	103
Southampton	52	106	128	.....	340	332	90	.....	.....	422
South Norwich	65	25	117	.....	199	.....	215	6	.....	272
Stirling	54	.....	125	.....	204	.....	145	40	.....	189
							*28			
Stratford	428	339	884	.....	1,740	169	1,371	118	100	1,990
Strathroy	142	.....	370	.....	512	...57	355	8	25	459
Thornhill	50	122	50	.....	241	149	*14	.....	.....	278
							67			
Tillsonburg	68	.....	181	.....	665	25	643	13	.....	727
Toronto	300	214	534	126	1,354	625	31	78	30	1,444
							*25			
Trenton	271	450	394	484	2,240	443	629	11	100	1,911
Wales	75	17	90	.....	187	.....	108	.....	.....	125
Walkerton	98	27	232	51	496	.....	284	52	.....	431
Walkerville	108	.....	210	.....	402	.....	420	.....	72	608
Wallaceburg	287	375	336	.....	1,050	.....	1,030	.....	.....	1,049
Walton	77	10	147	.....	362	.....	285	1	.....	298
							*17			
Waterloo	71	100	109	30	321	94	81	5	40	303
Watford	75	47	99	.....	368	18	281	20	.....	320
							*14			
Westboro	123	68	320	.....	578	62	282	.....	40	572
West Lorne	58	24	55	.....	156	.....	*124	.....	.....	195
Weston	576	25	1,846	101	2,664	330	1,722	.....	.....	2702
Wheatley	62	35	84	.....	744	.....	707	.....	10	788
Whitby	52	10	104	23	231	20	110	23	.....	219
Wiarton	49	.....	81	.....	137	.....	9	.....	.....	94
Winchester	153	75	160	.....	399	.....	222	.....	35	398
Windsor	176	500	424	.....	1,151	.....	352	.....	.....	1,035
Woodstock	194	551	350	.....	1,119	.....	797	35	125	1,191
Total	$19,587	17,365	37,361	4,168	115,509	9,299	61,656	4,166	6,607	112,074

* For lawns and gardens.

Ontario Department of Agriculture

TWENTY-FIRST ANNUAL REPORT

OF

The Agricultural Societies

AND OF THE CONVENTION OF THE

Association of Fairs and Exhibitions

FOR THE YEAR

1921

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
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1921

Printed by
THE RYERSON PRESS.

To His Honour HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the pleasure to present herewith for the consideration of your Honour the Report of the Agricultural Societies of Ontario for the year 1921.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1921.

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ANNUAL REPORT

OF THE

Agricultural Societies of Ontario

1921

To the Honourable Manning W. Doherty,

Minister of Agriculture.

Sir,—The twenty-first annual Convention of the Ontario Association of Fairs and Exhibitions was held in Toronto on February 8th, and 9th, and was attended by delegates from the Agricultural Societies of the Province. A report of the proceedings is here with transmitted, and also financial statements of the Societies, including the prize-money paid in the different classes, and the apportionments of the grants to Societies for their various lines of work.

At the Exhibitions held in the Province, educational features are being extensively developed and while the social side is not being neglected, stricter care is to be taken in the future and gambling devices at Fairs will, I trust, be a thing of the past.

A very commendable step is the erection on the grounds of some of the Societies, in conjunction with municipal councils, of community halls for meetings and entertainments. In many cases the Agricultural Societies' grounds are the only places in the nature of a park available in villages and small towns, and the opening of these to the neighborhood every day in the year, except when they are required for exhibition purposes, should be conducive to the best interests of the locality and extend the community spirit in the neighborhood.

Faithfully yours,

J. Lockie Wilson,

Superintendent.

OFFICERS FOR 1921

President ..... W. J. Connelly, Cobden.
1st Vice President .....John Farrell, Forest.
2nd Vice President .....J. F. Ault, Winchester.
Secretary and Editor .....J. Lockie Wilson, Toronto.
Treasurer .....J. E. Peart, Hamilton.
Auditor .....G. deW. Green, Toronto.

Directors.

District 1 .....Dr. A. T. Morrow, Maxville.
" 2 ..... W. E. Smallfield, Toronto.
" 3 .....Clem Ketcheson, Belleville R.R.
" 4 .....W. Calder, Beaverton.
" 5 .....W. N. Scott, Milton.
" 6 .....G. C. Johnston, Ancaster
" 7 .....Col. J. J. Craig, Fergus.
" 8 ..... Chas. W. Molland, Thorndale R.R.I.
" 9 ..... W. A. Brock, Petrolia.
" 10 ..... Dr. W. H. Huck, Mildmay
" 11. .....Rowland Hill, Huntsville.
" 12 Jas Tonkin, Fort William; A. E. Stephenson, New Liskeard; A. R. Woods, Sault Ste. Marie.

Representative to the Central Canada Exhibition—Wm. Hickson, Bobcaygeon.

Representative to the Western Fair—S. J. Monteith, Stratford.

Representatives to the Royal Agricultural Winter Show— W. J. Connelly, Cobden; Jas. McLean, Richmond Hill; L. J. C. Bull, Brampton.

FINANCIAL STATEMENT 1920

January 1st to December 31st.

RECEIPTS		DISBURSEMENTS	
Balance from 1919	$346.91	Printing	$ 54.19
307 memberships at $2, each ...	614.00	Typewriting	2.25
Exchange added to cheques	6.25	Directors' Expenses	109.71
		Officers' Expenses	160.30
	967.16	Assistants at Convention	17.50
		Annual Banquet	10.10
		Auditor	2.50
		Postage	10.50
		Exchange on Cheques	8.60
		Premium on Treas. Bond	5.00
		Balance on hand	586.51
			967.16

Audited and found correct,
February 8, 1921.

G. deW. Green,
Auditor.

Ontario Association of Fairs and Exhibitions.

Annual Convention

The Convention of the Ontario Association of Fairs and Exhibitions is always largely attended by delegates from all sections of the Province, and the Twenty-first Anniversary held in Toronto on Tuesday and Wednesday, February 8th, and 9th, 1921, proved no exception to the rule. The Hall at 22 College Street was well filled when the first Session commenced with the President, L. J. C. Bull, in the chair.

After announcing the banquet to be held in the King Edward Hotel, in the evening at 6.30 p. m., the President delivered his address.

PRESIDENT'S ADDRESS.

L. J. C. Bull, Brampton.

In welcoming you to this Convention, I may remind the delegates that this is the coming of age of our important Institution, this being the Twenty-first Anniversary since it was organized in 1900. I am pleased to see such a large attendance and also to note that so many sections of our Province are represented, and that increased interest is being shown each year.

On the whole, the Agricultural Societies of Ontario, both those holding Fall Fairs and also Stock-breeding Societies, had a successful year in 1920. A few of the Exhibitions which had selected late dates experienced bad weather conditions, but the grant made by the Ontario Government to partially indemnify Societies for losses in gate receipts has been of the greatest benefit to each, and, it is not asserting too much to say that without such a grant many of our smaller Societies would have gone under or would have been tied up for years on account of the heavy debt imposed by meeting the claims of Exhibitors and the general expenditure in connection with a Fall Fair that is incurred whether the Exhibition is a success or not.

I am pleased to report that there is a marked improvement and advancement made in the number of Societies entering in the Standing Field Crop Competitions. Last year's entries were larger than any since 1917. The rules and regulations have been improved as the years went by, but in 1921 a new departure is being made and I wish to congratulate our Superintendent on the New Regulation for the combined Standing Field Crop and Threshed Grain competition which has been inaugurated. We are anxious that as many of our Societies as possible should take part in this Combined Crop Competition. The substantial prizes offered will be a great inducement and the necessary Registered Seed can be purchased at reasonable rates.

The withholding of the Short Courses last year was, in my opinion, not good business. While our Departmental Judges have been materially helped in the past by our system of Short Courses, there is still room for greater efficiency, and without this educational feature of our work, progress will not be as rapid as we desire. However, we trust that this year they will again be renewed.

Last year a deputation waited on the Government asking for an increased

grant as our Agricultural Societies were anxious to further in every possible way the live stock industries of this Province, and, owing to the smallness of the prizes offered and the reduction of the purchasing power of a dollar, together with the high cost of labour, stockmen were loth to bring their horses and cattle out in as large number as in the past. The remedy is, in my judgment, to double the prize lists particularly in these classes, and I believe we can go to the Government in full confidence in the justice of our request to have our grant materially increased. Our Boards of Directors of the 360 Societies in the Province give their time and energy to the work of the Fairs and Exhibitions without hope of financial reward and for every dollar put up by the Government, several more are added to it by our members, and every cent of it is spent strictly in accordance with the Act. Now that a Farmer's Government has control of the treasury of the Province we should not ask for assistance in vain for the work that means so much to Ontario.

I know by experience that the men who attend our great Conventions cause little trouble to the chair. The programme is a lengthy and a good one and of the greatest interest to the Fair men of Ontario, and I am sure that your deliberations will result in much good to all concerned.

In closing, I wish to thank you for the honor you have conferred on me by electing me as your President for two successive years. I have endeavoured to do my part in my humble way, and with the hearty co-operation of our Superintendent, Mr. J. Lockie Wilson, our work has shown results and has not been in vain.

W. E. SMALLFIELD: I can only hope with you all that the vision and energy and determination that has been put into the Association in the past twenty-one years may be repeated in the years to come, with correspondingly great results. Taking up the President's address, I notice that he speaks first of the Wet Weather Insurance. I do not know how it has been generally, but in our particular district two or three of our best Fairs were very badly hit with wet weather, and had it not been for the Wet Weather Insurance of this Association they would have suffered much more than they did, and we are to hear of something more in that line before we are through to-day. The very virile Secretary of the Kingston Exhibition has mapped out a new path. He took the responsibility of insuring in some Association his own Fair on his own account, and has thereby been the very fortunate winner of some $2,000 for the Kingston Fair. We, as an Association here, can take pride in the fact that it is this Association which brought into effect the Wet Weather Insurance. I am not farmer enough to know a great deal about the Field Competitions, but the Secretary, I believe, is to lay before us something new along this line. About holding of short courses for judges: we are all in accord with that. As far as our own Fair is concerned, my fellow delegate was sent down here to speak on that one topic, to ask the Government that these classes be continued. The expert judge was at the inception chosen not so much because of his expertness, but rather because he was not a local man: but, as the years have gone on, the Exhibitors have been learning, and the judges, too, have been of a higher standing. This improvement has resulted from the Short Courses which we had. It may have been all right to have cut them off during the war, but it is time they were re-opened.

The President also expresses the opinion that we should make demand for increased grants. Money is not everything. The opportunity back of our Association is after all the main thing, but the money makes the work easier, and in the last few years the Fairs have made such progress that we are fully warranted in asking Government to increase the grants.

I am not very inclined to dwell on the past—"Let the dead past bury its dead". My own inclination is to look more to the future.

What can we do to still further improve our position and make our Fairs more useful? We have representation here I suppose of two classes of fairs—the large one and the small rural Fair.

Our County Fairs could be very much improved. It seems to me that they should not be content with being three-day events. They should aim to be tak-

W. J. Connelly, Cobden,
President.

ing a part in the improvement of the community the year around. In our own home town we are going to make our Fair grounds the community centre play grounds. We are enlarging our track, are going to cut down a hill, and have one-third of that track converted into a community play ground, with all the appliances which they have in cities for their schools, in the middle. We will have baseball grounds there at the end, and at the other end a bowling green and tennis court. The idea is to develop in our community good clean sports, from which the professional will be eradicated. That spirit in our community will be of vast importance.

As to the small rural Fair: As District Director, I had intended to visit the Fairs in my district this Fall; but unfortunately, I was ill, so after the Fairs I took up correspondence with the various Secretaries, and found from information received that the small rural Fair is facing several problems, and many of them are having hard work to finance. Now can we improve that? This is to be the topic of an address by a speaker from Western Ontario to-morrow. He comes from one end of the Province and I from another, and possibly the conditions are somewhat different, so I will also make a few suggestions.

The rural Fair is well worth saving; it should be the greatest educational feature of all. The big fairs of the towns and cities are industrial and amusing largely, in the smaller rural Fair it seems to me you can educate the farmer and get him interested in new things. There are less amusements and attractions, and the educational factor can be more featured.

I would advise Fair Directors to early get together and plan their prize list in the spring. They should recognise the importance of their particular field, and realize that they have something more to do than to be present when the Fair is being held and do a little work then.

Another suggestion has been made to me—to have a very virile advertising campaign instituted, with the idea of educating the people. You must have something to draw the people, some form or amusement, something with merit in it. I would like to see some particular exhibit about which you can gather the interest of the people. There is the Ontario Museum of Art in Toronto with historical and other attractive features which could be taken out and put into our rural fairs and made to draw the people to our Fairs. How could you do it, so that these articles would be guaranteed to be taken care of?

I would have the third and fourth year Students in the Agricultural Colleges sent out to the County and rural Fairs in charge of these historical exhibits, and models of the newer labour-saving devices which may be on exhibition in the Colleges and explain to those who are taking an interest in the newer farming methods. Also I would have poster advertising—just a few words but strikingly displayed around the grounds or make an exhibit of itself. Then you could have Egg and Wool exhibits in miniature, and these might be sent to the rural Fairs where people would have more opportunity to study them than at the larger Fairs. Also prize cattle and live stock. Rural Fairs might make favorable advertising for them. The improvement of live stock will be of great benefit to the country.

Amusements: My experience has been that you must provide amusement for the people. Make them clean, and get the noise and motion. and I think it would be well for this Association to take up the suggestion that has been mentioned here—that an arrangement be made for a circus to travel from one to another of these Fairs. And such concerns should be given a certificate of character so that the various rural communities might know that they are engaging a good company.

These are just my own ideas. and I submit them to you, the thought back of it being my "little bit," to see that in the next two years the vision and energy of the past shall be put into the future.

REPORT OF SUPERINTENDENT.

J. Lockie Wilson, Toronto.

The efficiency of an Agricultural Society's fair depends largely on three conditions: enthusiastic and painstaking officials, good weather and an interested urban and rural community. Weather conditions are uncontrollable, but the others are in the hands of citizens and farmers of the districts surrounding the place where the exhibition is held, and I am of opinion that, on the whole, the fairs of 1920, were marked with a large percentage of the above conditions. Bountiful grain crops and green pasture land were valuable adjuncts in keeping exhibition stock up to a high standard, and the financial departments of exhibitions have, in many instances, been in such good condition at the close of the year that many of our Boards of Directors have decided to erect permanent, substantial housing accommodation in main buildings, stock and poultry houses. In a number of instances, Agricultural Societies are co-operating with urban centres to have erected on exhibition grounds Community Halls to be used as social centres as well as for fair purposes. Others are arranging with town and village municipal bodies for the utilization of their grounds, other than at exhibition time, as parks and playgrounds. This is a new departure and might well receive the serious consideration of the officers of many of our Agricultural Societies and rural municipalities. In the last analysis the smaller towns and villages are part and parcel of your rural community and by co-operatively working along the lines above mentioned, a kindlier and more friendly spirit would be inaugurated, for, after all, our townsmen could not get along without the surrounding community of farmers and the latter, in their turn, would not prosper without a co-partnership with town dwellers.

A wonderful change has taken place in recent years through the introduction of automobiles in connection with the farming industry of this country, and patrons come to the fairs from what would have been considered prohibitive distances in olden days. When farmers and their families can step into their cars and come to a fair from a radius of 30 or 40 miles in an hour or so, and be able to be back home in time for chores and supper, one begins to understand the marked evolution which is being inaugurated. But, with this rapid transport of families, there has developed a condition where stock men hesitate to drive their herds over highways lined with swift-running machines with their accompanying clouds of dust, their honking horns and speedometers registering from 30 to 40 miles an hour. I see in the incoming years smaller but better exhibits of live stock carried to our fairs in twentieth century power machines. One wonders what lies in the storehouse of the future, when we read that aeroplanes have been utilized to carry high-priced horses from England to France.

Field Crop Competitions.

Field Crop Competitions continue to show a steady advance. In 1918 and 1919, owing to the unfavorable seasons, many Societies did not enter, but in 1920, farmers were able to get their crops sown in good time and 178 Societies made entry as compared with 162 in 1919, the largest number yet taking part.

The change in the rules permitting all the seven prize winners in the local competition as well as those who scored 85 points and over to exhibit at the Cana-

dian National and Central Canada Exhibitions and the Guelph and Ottawa Winter Fairs went into effect last year, increasing the exhibits considerably and more especially at Guelph and Ottawa, where the grain display was the largest and best in quality ever seen at these exhibitions where the entries have always been large and of a high standard.

A proposition was made at the last Convention to change the system adopted for the Standing Field Crop Competitions, but the plan proposed was unanimously opposed by the delegates, and the regular Field Crop Competitions will be continued as in the past.

New Combined Competition.

A new form of competition, however, is available this year to those who wish to enter. This is to be known as "The Combined Standing Field Crop and Threshed Grain Competition." Prizes will be awarded on the basis of the combined score on crop in the field and the threshed grain. Competitors will make their entries to me in the same manner as in the regular Field Crop Competitions, for which special entry forms will be sent to the Secretaries. The standing Crop will be judged first but in this competition the threshed grain will also be judged in the bins or sacks of the competitors, the combined scores determining the final award. The Society will decide the kind of crop in which to enter. It must be clearly understood, however, that if a Society takes up this combined competition, it can enter in the regular Competition with one other crop only, the special competition taking the place of one of the crops in the Regular Competition. If a Society decides not to take up the special competition it can enter in two crops in the Regular Competition as formerly.

The regulations governing the new form of competition are as follows:

1. Societies that decide to conduct this special competition will not be eligible to enter the usual Standing Field Crop Competitions with the same kind of grain as in the special competition; they may, however, enter the Standing Field Crop Competition with only one other kind of crop.

2. Societies deciding to enter this combined competition should have 15 entries.

3. The cleaned seed will be judged either in the sack or bin on the premises of the competitor on or before January 15th, 1922.

4. The seed used by the competitors must be registered, or, if this is not available, seed approved by the Provincial Seed Committee, of which I am Secretary.

5. The minimum quantities of cleaned seed to be judged in the bin must be not less than the following:

Wheat	75	Bushels
Barley	75	"
Oats	100	"
Peas	50	"
Buckwheat	50	"
Corn	50	"
F. Beans	25	"
Potatoes	100	"
Clover and Timothy	10	"

6. Seven prizes will be offered in each of these competitions; 1st, $75; 2nd, $60; 3rd, $45; 4th, $35; 5th, $30; 6th, $20; 7th, $10; total $275. Of

A part of the Ontario Agricultural Societies' Field Crop Exhibit at C. N. E.

these splendid prizes offered, the Society is obliged to contribute only $25. The contribution from a Society in the Regular Competition will remain the same, $25 for each crop.

7. All competitors are required to sow the same kind of grain and the same variety. That is to say, if a Society decided to enter in oats it will decide what variety of oats it will select for this competition and each competitor must sow the same variety, all of which must be registered seed, or, if this registered variety is not available, the seed must be that approved of by the Provincial Seed Committee. The following are the varieties from which selections must be made:

(*a*) OATS. Banner, O.A.C. No. 72, Victory, Gold Rain, O.A.C. No. 3.

(*b*) BARLEY. O.A.C. No. 21, Mandscheuri.

(*c*) SPRING WHEAT. Marquis, Red Fife, Huron.

(*d*) PEAS. Arthur, Golden Vine, Canadian Beauty.

(*e*) CORN. North Dakota, Longfellow, Quebec Yellow, Quebec 28.

(*f*) POTATOES. Green Mountain, Dooley, Carman No. 1, Irish Cobbler, Early Ohio, Gold Coin.

8. Registered seed of most of the above varieties may be obtained at reasonable prices. Information re sources of supply may be had through my office. Where registered seed of a given variety is not available at the time of making entry, our Provincial Seed Committee will take the necessary steps to secure seed which will be acceptable.

9. Where Registered Seed is sown by competitor, The Canadian Seed Growers' Association will accept the field score of the field crop competition judge and will issue certificate of registration providing the field score warrants this. In other words, the competitor becomes automatically a member of the Canadian Seed Growers' Association and may have his seed registered and catalogued, provided he has any for sale.

The large prizes offered for this competition are to encourage the production of high class seed of approved varieties and in substantial quantities.

Arrangements have been made with L. H. Newman, Secretary, Canadian Seed Growers' Association, Ottawa, to supply guaranteed Registered seed grain at the following prices, and intending competitors can order from him.

PRICES OF REGISTERED SEED GRAIN.

Registered	Banner Oats	$1.00 - $1.25	per Bu.
"	O.A.C. No. 72 Oats	1.00 - 1.25	" "
"	O.A.C. No. 21 Barley	2.00	" "
"	Marquis Wheat, about	3.00	" "
"	Huron Wheat, about	3.00	" "
"	Arthur Pease	3.00	" "
"	Wisconsin No. 7 Corn	3.00	" "
"	Quebec No. 28 Corn	3.00	" "
"	Salzer's N. Dakota Corn	4.00	" "
Improved	Golden Glow Corn	2.75	" "
"	Bailey Corn	2.75	" "
Certified	Green Mountain Potatoes	2.00	" "
"	Irish Cobbler	2.00	" "
"	Dooley	2.00	" "

The above prices are f.o.b. shipping point. You should send a Money Order sufficient to cover the amount you desire to purchase.

It will be an advantage to order as early as possible.

A number of farmers who have been prize winners in the Field Crop Competitions have reported to me that owing to the very early opening date of the Canadian National Exhibition great difficulty was experienced in getting their prize grain threshed in time to exhibit at that show. In view of the proposed opening of the Royal Show, in November, would it not be advisable to dispense with the exhibit at the Canadian National and only show at the Winter Fairs of Guelph and Ottawa, and the Royal. This will give all those eligible to compete the chance to get their grain threshed and properly prepared. I shall be pleased to have the opinion of the delegates in regard to this proposed change.

Short Courses.

I expect that the Short Courses in July, at the O.A.C., Guelph and Central Experimental Farm, Ottawa, that were not held in 1920, will be continued this year, as, without them the work of our Departmental Judges cannot be kept up to the uniform standard required.

It will doubtless be of interest to our delegates to learn that the year's expenditure of the Agricultural Societies in this Province was $660,745, or over six and three-quarter dollars for every dollar of grant given by the Government, every cent of which has been carefully expended in accordance with the Act.

Gambling.

From different parts of the Province complaints have come to me that gambling is on the increase at Fall Fairs in Ontario. I am sorry for this as it is not creditable to the Boards of Directors who accept trifling sums from these fakers for permission to operate on their grounds. If my advice is taken the officers of the 360 Fairs in this Province will see to it that an up-to-date officer is appointed at each Fair who will do his duty fearlessly and arrest these law-breakers and confiscate their hellish devices. I quite understand how difficult it is for directors in charge of the different classes to be able to attend to this side of their duties and, in order to overcome the difficulty, special officers as before mentioned should be employed. The Department in the past has been lenient with the Societies which broke the law, and I was advised by two ex-Ministers of Agriculture to notify Societies that, if they allowed gambling on their grounds, their grants would be withheld, but up to the present this has not been done. This year I have sworn affidavits from prominent men certifying that gamblers were operating at several Agricultural Fairs last fall. The complaints are being investigated, and if the charges are proven, I am not in a position to state what the penalty will be.

Changed Fair Dates.

In order that greater economy may be practised more care must be taken in the future for the arranging of the dates of fairs so that the circuits for judges can be drawn up and much time saved between fairs, especially in New Ontario, where sometimes judges are required to remain over for two or three days on account of intervals.

Another matter to which I wish to draw your attention is that sometimes fair dates are arranged and sent to the Department and later on these are altered, in the meanwhile judges have been notified and circuits arranged, and these changes seriously interfere with the work of the Department.

Many suggestions have been received commending the amalgamation of a number of the smaller fall fairs, particularly in Northern Ontario. This, I consider, a good proposition and should be seriously taken into consideration by the Directors of Agricultural Societies in that section of the Province.

The grants for four Societies in this Province were held up last year owing to the Secretaries and Treasurers neglecting to make proper returns. It is necessary for these to be made promptly, and if the officials of a Society fail to do their duty they should be replaced by others who will.

In the Horse Ring.

Shortage of Farm Labor.

Difficulty in procuring labor to prepare exhibits of agricultural products and live stock for our fairs last year proved a serious drawback and a lessening at many fairs of the number of live stock exhibited.

Complaint has been made that some newspapers and Farm Journals employ a number of, to say the least, enterprising young men to take subscriptions at fairs and exhibitions. The dollar is paid, but, in many instances, the papers are not forthcoming. Farmers have been told by these agents that if they subscribe for the papers, they will receive all the bulletins issued by the Federal and Provincial Governments. I saw at a recent exhibition several young men claiming to be agents of a reputable farm journal take the names and addresses of farmers and agree to give them the paper one year free of charge, then, later claimed $1.50 which they said was to cover postage. Surely such misrepresentation is not required. and certainly does not add to the prestige of the journal in question.

I am glad to see so many of the men who are connected with our Societies who come here year after year filled with enthusiasm for the work in hand without any hope of reward other than the best interests of the great institutions you represent. May the energy and enterprise you have shown in the past continue down through the years and the "Well done good and faithful servants" will be recorded when your work here is finished and the torch taken up by your brothers and your sons.

I thank you for the many kindnesses shown me in the years we have worked together for the common good.

W. J. Connelly—I like the thought that Mr. Wilson brought out about co-operation of the Agricultural Societies in connection with Community centres and halls for towns and villages and rural districts. I have had some experience along these lines, in a Memorial and Community Hall combined, for we have in the village of Cobden built the first of its kind in Canada. The people of the village and surrounding districts built this magnificent structure at a cost of about twenty thousand dollars. First, they subscribed six thousand dollars—then sold thirty year debentures to the amount of $11,000, and from the Ontario Government we received $2,000, which we appreciated very much. This memorial was first mentioned in public the day when the people from both the country and village were gathered together to rejoice over the signing of the armistice on November 11th, 1918. One year from that wonderful day the Hall was opened after being finished and equipped in good shape. November 11th, 1920, shows a revenue sufficient to carry the debentures and pay the caretaker. The dimensions are 36 feet by 70 feet. The exterior is a frame building veneered with cement blocks. Above the main entrance, which is facing Main Street, is printed in raised letters of red cement, Memorial Hall, and above this is carved a group of munitions.

The interior is as follows: The main floor is the memorial part and as you enter it, the first thing that catches your eye, is hanging on the wall, to the left of the stage, a Bronze Memorial Tablet, which contains the names of the boys of Cobden and surrounding community who paid the supreme sacrifice for us and others in the Great War, and to whom the hall was erected as a memorial. In the front there is a large stage fitted with four different curtains. The building contains about five hundred orchestra seats and has an elevated floor. This part of the hall is used for all sorts of clean entertainments while the basement, is used for Council Chambers, Public Library, suppers and banquets. The third floor is equipped as a beautiful Masonic Hall. This has done more to bring co-operation between the village and country people, than almost anything else.

I would like to see a great many more farmers going into the crop competitions. As yet, in a number of places there are only about ten or fifteen entries. I believe we could help this situation very much indeed if a delegate from each society would go home from this Convention determined that he was going to spend a day or two in the country, seeing his neighbors and telling them of the benefit it would be to themselves and their country if they would enter this field crop competition.

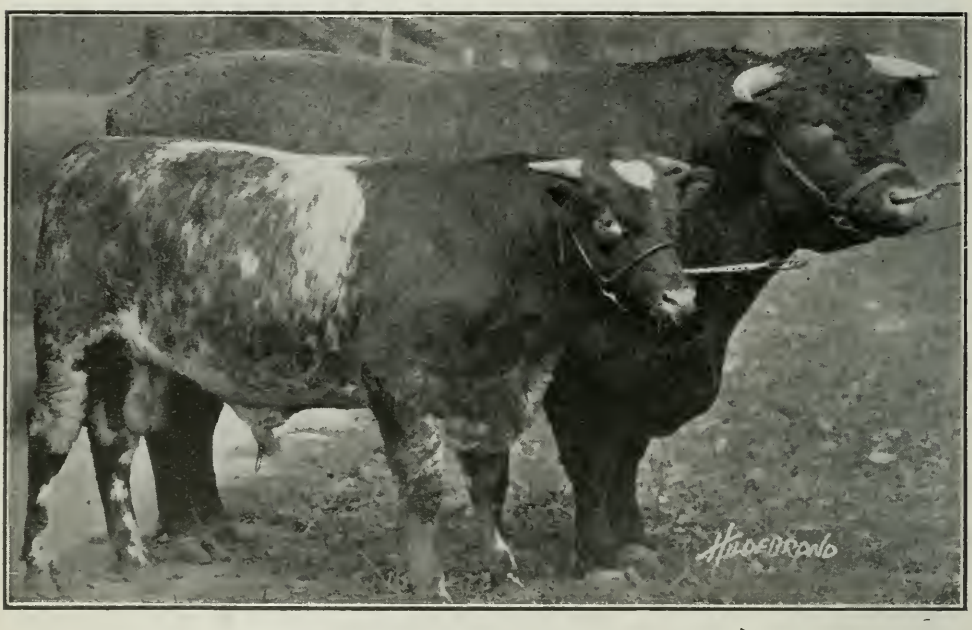
If I would comment on this new competition it would be that the entries required were too many for a great many of the societies. It would be hard for a small society to get fifteen entries. Could it not be that a small society could have, say, five entries, with three prizes such as forty-five, thirty and fifteen dollars.

This is a suggestion. There are a number of valuable items in this report that I could dwell on for some time. I am glad that Mr. Wilson is still after the fakers and gamblers. Also hope that the Department will not overlook the short courses at Guelph and Ottawa.

A THAMESVILLE MEMBER: We cannot dispose of our corn unless it is shelled because of the embargo on corn which was brought about because of the corn borer.

C. O'REILLY. I was notified from Ottawa that we had to have our corn shelled, and I have written to a number of corn men, and one is going to put in a machine for this purpose.

J. LOCKIE WILSON: Just to make that matter clear: If you decide to have that 75 bushels, if it is there in the bin, either shelled or otherwise, so far as I am concerned it will pass. Of course it will be more difficult to judge the corn in the cob.



Sire and Son.

R. H. ABRAHAM: Mr. Newman pointed out to me recently that it was absolutely necessary to have the corn on the cob in order to have the proper scoring. The delegates who have spoken about an embargo are perfectly right. But so far as judging is concerned, you must have the corn on the cob. I do not think anybody who grows corn will be so foolish as to shell his corn before the first of April, because it is apt to spoil.

MR. SMITH: The County of Essex is not under embargo. We grow Dent corn and we are now erecting a drier for the purpose of handling corn outside, but we are selling it on the cob and putting it on the market.

A WOODSTOCK MEMBER: Is there any way whereby we can make it compulsory for those obtaining prizes in the Field Crop competition to show their grain at our local fair?

J. Lockie Wilson: A resolution was passed here at the last Convention compelling the Field Crop prize winners to exhibit a sheaf of grain at their local fair. Every prize winner is obliged to exhibit a sheaf of grain in the local fair, provided that the local Fair Board gives them prizes of $5, $4 and $3. The directors of the fair must offer those prizes, and they can refuse to pay the prize-money to any winner of the competition if he does not exhibit.

A Woodstock Member: You will all agree with me that at the smaller fairs it is very hard to get the farmer to show threshed grain, and if we could in some way have that fixed, that those obtaining prizes would be compelled to exhibit a bushel of grain, it would add materially to the interest in local fairs.

J. Lockie Wilson: The only objection is that the fairs start the first week in September; it is a busy season, and if a man could not get the threshing machine it would be hard for him to exhibit threshed grain. So it was made compulsory to have a sheaf of grain at the exhibition.

A Member: I would like to ask if there could be any way in which Agricultural Societies could guard against accidents happening on the day of the fair. The spectators and exhibitors should have more of the responsibility upon themselves than they have at the present time. There should be some clause in the Act, to this effect. I know the fairs between here and the Georgian Bay are just as responsible as we are. At our fair last fall, while the stock was being taken off the ground, a calf bolted away from the rest of the herd, ran on to the track, and caused a boy on a wheel to be thrown off his bicycle. He injured his shoulder. His father brought an action against us for damages and we settled for $625, as advised to do by our lawyer. Now you all know that when an Agricultural Society has had to hand $625 out of their funds in the year they have not much left. We covered the outlay with a subscription list through the township. We should have some way of guarding against such occurrences.

Mr McArthur: Every year that we hold our fair we take out an accident policy relieving all of our directors from any responsibility. The policy covers three days and we pay $75 for it. That covers all losses.

Another Member: We had the misfortune to have an accident on our fair grounds. In our town we left our grounds open for the school children to go in and have their games. The boys had a game there one day at eleven o'clock. The noon bell rang for dinner, and half of them ran out and shut the gate against the other half. The boys on the inside pushed the gate, it came down, struck a boy, and lamed him in the hip. The father of the boy entered action against us for $2,000 damages, $300 for doctor's attendance, nursing, etc. We took the question up with our lawyers. It finally went up to the Court of Appeal. On the 10th day of January we settled with the boy's father, paid the costs of the Courts, $268 each to the lawyers, and $200 to the boy. We admitted and knew that those people were trespassing on our grounds. We put no barrier against them, and the lawyers told us we were responsible, and even if we had debarred them and had any kind of a death trap we were responsible.

Moved by Mr. Tennant, Almonte, and seconded by Alex McKay, Clayton. "That whereas in some sections of the Province natural conditions do not permit of holding Grain Crop Competitions to compete for prizes as set forth by the Department of Agriculture. Be it resolved that in such places some other form of competition be recommended by the Government, such as some form of competition in live stock."

This resolution was left on the table to be dealt with.

HAVE THE FIELD CROP COMPETITIONS BEEN SUCCESSFUL?

JNO. FARRELL, FOREST.

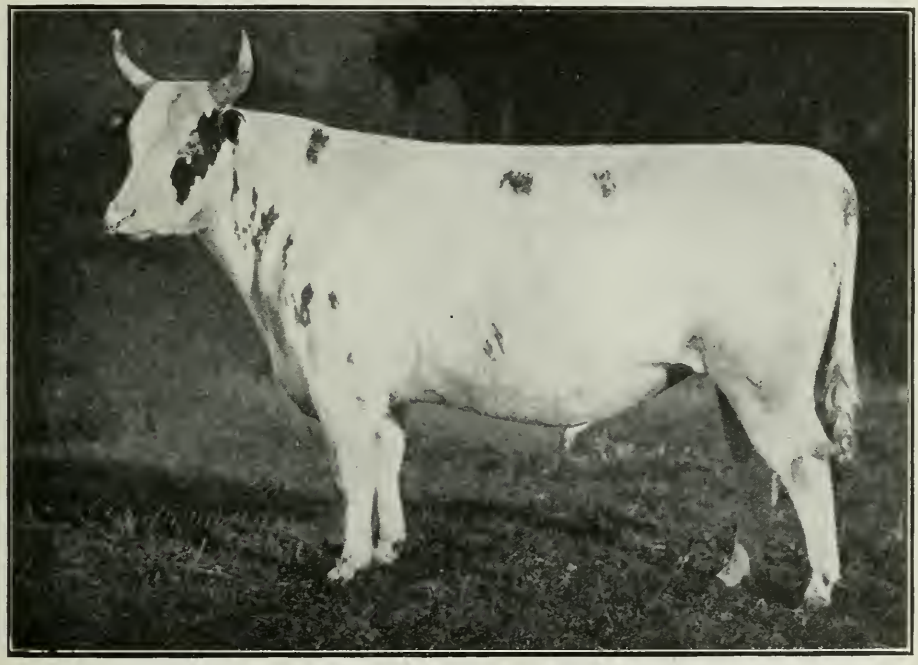
I am going to say a few words about the Field Crop Competition. I am not going to go into it quite as extensively as I proposed doing, because of the very able and efficient manner in which the Secretary has handled that feature. I am going to refer to one or two other matters because it seems to be the order of things to-day to find remedies for certain conditions that have proved somewhat detrimental to the interest of our programme, along those particular lines.

If there is any one feature more than another that has advertised us advantageously not only at home but afar, it is the products of the field. You will remember a year ago when the representative of the Fairs of Illinois told us on this platform that at the Springfield Fair in Illinois—one of the greatest fairs outside Chicago, that is held in that State—that people repeatedly came into his office and said to him: "Are we going to allow Canada to beat us in this competition?" He said: "We don't want to." "Well" they said, "they have accomplished it." There is an evidence.

What have we reaped from that? I read in the Chicago papers that very night, that 25,000 people had left the United States and gone over into Canada. That is what it has accomplished. When we are told by such an authority that we can't be beaten, what do we think of our Field Crop Competitions? If we had nothing else to say, we have accomplished a work that no other power under the canopy of heaven could accomplish along that line. At Detroit, at the time of the State fair, the magnificent sheaves of wheat, oats, barley, flax, buckwheat and all of the other products of our field were carefully selected, daintily arranged, and the Directors of the Michigan Fair have come to the conclusion that one of the attractions to the great fair at Detroit is the portion taken up by the Dominion Government Exhibit. The only organization that is permitted free space in that great hall in Detroit is the 50 feet that are given to Canada. Why? Because that is setting an example, is educating the people who in some districts have become a little indifferent, and are careless farmers, are farmers because they just happened to be born there and don't care for anything else very much, and don't care very much for it. But the foremost men of the States to-day have come to the conclusion that, that splendid exhibit that has been repeatedly presented there is an incentive for the others not only to follow, but to try to beat. Honest competition to-day is what we are all desirous of.

After all, what have we received from Detroit, or what are we getting for spending that money and engineering this magnificent plan in the neighboring state? The Dominion Government's office at Detroit, in the months of April and May, in 1920, secured over 1,600 people, to take their families and their wealth, and locate in Canada. And when they come into the office and sit down and discuss those questions with us, we will say: how is it you got this information? How did you first come to the conclusion that you would like to go to Canada, and the answer invariably is, "The splendid exhibitions you have been putting on in the various cities of the United States have convinced us that the land and the climatic condition that will produce such a product would make a splendid home."

Of course, the Canadian Government has largely in the past had its free grant lands in the West and its revenue was coming from there, and it devoted a good deal of time and attention and the greater part of the advertising done in the interest of the farther Provinces. Even that is an advantage, because as those provinces grow in wealth and population, so does the Dominion of Canada. If the splendid exhibits that we are able to collect from the product of our own fair Province were only taken and placed on Exhibition and a representative sent throughout the various States—because if you have your articles there alone without somebody to represent them, they may say: "This is purchased," or some other unkind thing is said—what an influence they would have in bringing in settlers. On one occasion I was addressing a number of people in a hall on the splendid exhibits from Northern Ontario, and heard a number of remarks expressing doubt as to these articles coming from that section, and at the close



A Prize Winning Ayrshire.

of the meeting I offered $25 to any one who could show where one of the articles on exhibit had not been gotten from Northern Ontario. I did not have to pay out a dollar, because I had been largely instrumental myself in securing a lot of these articles from Northern Ontario. We had barley, wheat, and oats threshed north of Englehart and shipped here for the first day of the Fair.

What have the Field Crop Competitions given to us? Many a farmer before he got into the Field Crop Competition, was a little careless, if there was a small weed in the fence corner he would not pluck it up. But since he entered the Field Crop Competition—and everyone of you who has entered into this can endorse what I say—it has contributed very materially to the advancement of agriculture, it has kept your fields clean and free of weeds. And you know if you have clean fields, we will have better seed, and you get better production.

and you have goods in your possession that command a higher price than an inferior product.

R. H. ABRAHAM: I am sure that all of us have enjoyed very much our good friend Mr. Farrell's interesting address.

It seems that there is no institution that is doing the same amount of good in the Province of Ontario as the Standing Crop Competitions. I say this advisedly. A good many years ago when the Crop Competitions were first organized, I had the pleasure of judging a field of Corn in the County of Essex. The fields engaged in that competition were as well cared for as the average field in the County of Essex. But there were weeds in almost every field and you could find almost any specimen of weeds. I had the pleasure a year ago of judging the same Crop Competition, and I can only say this,—that the poorest field last year would have taken the first prize in the first competition that I judged. There were fields that had not one solitary weed in the whole plot. There were not any in the fence corners.

I believe that the Standing Crop Competitions are doing a work that no other organization is doing. We have District Representatives throughout the Province. We have Agricultural experts of all kinds and descriptions, but in my opinion there is nothing that has carried the gospel of better and bigger crops like the Standing Crop Competitions have done.

Mr. Wilson was speaking about the new Standing Crop and Threshed Grain Competition. I believe that is a forward step. I am very pleased indeed to hear that announcement. I had the pleasure of talking to Mr. Newman and he outlined some features which he expected would result from the Standing Crop Competitions. The demand for registered seed throughout Ontario has grown to such an extent that we cannot supply the demand, but Mr. Newman has assured me that there would be enough registered seed saved so that all of these new Societies that are going into the new competition that would require registered seed would be fully supplied. I dare say at this moment there are in this room a number of stockmen that realize the importance of keeping registered stock. Why? Because they can trace back in a direct line the ancestry. If a cow, they can tell by her ancestry how many pounds of butter she can make, how many pounds of milk per day to expect. When you buy registered seed you know what to expect. You will know it came from a field that was hand-selected, and that every head in the whole field was gone over before it was used and the examiner determined it was a good head, if oats, that there were the proper number of kernels, and that they hung the right way. That has been going on for a good many years. And so in planting registered seed you will be in a position to grow the very largest crop. I know one farmer in Kent County who has produced 100 bushels of oats per acre from registered seed, two years out of three. I believe to a very great extent the thing that made that possible was because he had been sowing registered seed.

In the Standing Crop Competitions in the Province of Ontario, I believe it would be to your advantage to try and secure and plant registered seed grain. It is a guarantee of the purity of the grain. and it is a guarantee that behind that grain there is something more than in the ordinary grain.

We were speaking a few minutes ago about the Corn Borer. That is a very live question in the Province of Ontario at the present time. The restrictions

are placed only over a part of Ontario, not over all the Province. The County of Essex is free and they are allowed to ship corn on the cob, the same as always; part of the Counties of Kent and Lambton are under embargo. The Department of Agriculture, Ottawa, has issued a chart showing the area restricted. The Government have passed regulations that corn grown in restricted areas must be shelled.

I believe it would be to your interests, when you receive corn which has been shipped to you on the cob, if you want to be sure that you run no risk of getting the corn borer on your farm, to destroy the cob. I believe that in the County of Essex, the corn growers co-operate, and have decided with every bag of corn shipped out to put a notification in the bag, advising the farmer as soon as he shells the corn to burn all the cobs. Sometimes the corn borers come up through the cob, and experts believe that the borer was largely spread through Ontario by this means. I advocate the planting of registered seed always.

R. E. Mortimer said that the four leading factors which had to do with the success or otherwise of the Field Crop Competitions were: The Association, the local Society, the Judges, and the Competitors. There should be mutual confidence and co-operation between all these.

EFFICIENCY OF REVISED PRIZE LISTS IN LADIES' DEPARTMENT.

Miss M. V. Powell, Whitby.

The Ladies' Department at our Fairs and Exhibitions is so important that no Fair would be complete without it. We, therefore, aim at a prize list for ladies' work that will be a power of efficiency from every standpoint of homemaking, including the useful, the artistic, the uplifting both physical and mental; thus educating for the highest standards by the power of producing the effect intended.

Looking over some of the records of the Provincial Agricultural Exhibition of 1871, our attention is attracted by such items as these in the ladies' department: Tallow candles, mop and scrubber, common and fancy soaps, medicinal herbs. We will see that a steady though gradual advance has been made by the Agricultural Societies in the work of the Fairs, and a glance at the lists of to-day will show something of the progress which has been made.

Our objective in the preparation of prize lists is, briefly, to secure better quality of exhibits, to develop talent in household arts, to arouse a deeper interest in the intimate and vital industries of homemaking, especially in helps for tht young housewives the young mothers, and the new Canadian women, and to promote wholesale competition among the exhibitors.

The Agricultural Fall Fairs and the Rural School Fairs are moulding the ideas of homecrafts in the minds of our maids and matrons in whose hands the health and prosperity of our country largely repose, through the using of wholesome foods, the knowledge of their preparation to preserve their nutritive values which build up the brain and muscle of our Nation; and in the care of the household in the matters of clothing, sanitation, refinement through home decorations and the various lines of Home Economics. It is better far for the efficiency of Canada that her women should be versed in the knowledge of the culinary and domestic arts than that they be polished stateswomen. If they can wield their power in both home and state, it will be well indeed for our fair land.

The helpful exhibitor at the Fall Fair has a greater object in view than simply getting prizes. There is a higher motive and one who realizes the possibilities and educational work of these Fairs will tender the merited support.

The Fall Fairs and Exhibitions are for the purpose of educating the citizen, especially of the rural sections, to emulate the best efforts of his most successful neighbor in the production of those things for which his particular part of the district is most noted; and, in addition, to bring before the public at large, the the possibilities for growth of Agricultural products of various kinds. This applies to the ladies' department especially, in showing the best various methods of utilizing these products. Why not select some particular product, especially developed in some section of the country and, either the Society or some local

Main Building and Band Stand on New Grounds, Stirling Fair.

women's organization show the different ways and methods of using that product. I quote from a report of the Ontario Vegetable Growers in 1916, which will emphasize my point. "We are growing rhubarb, turnips and celery, but how many people know what to do with it when they have bought it? The reason for the small demand to-day as compared with the production, is the fact that the vegetable is not properly prepared for the table. Advertise rhubarb in the spring time, its medicinal qualities, facts about it and benefits from eating. Ask for certain varieties of apples or other fruits for making pies or other products."

The prize list would make for greater efficiency if we could introduce tests. There are a certain number of standard varieties of potatoes. Why not have a practical demonstration at the Fall Fair of the different varieties, showing which variety grown in that district is the most desirable from the housewife's standpoint, and showing also the food value and methods of preparing.

I am of opinion that the highest efficiency will result only when the judges have a definite standard of work and all those acting in that capacity honestly endeavor to make their awards in accordance with these standards, based upon specific knowledge of the work undertaken. Judges without knowledge cannot by their decisions establish a standard worthy of attainment by the mass of exhibitors, and wrongful decisions will lead many individuals to be-

lieve in wrong standards. It is the Judge's duty to suggest means of bringing about necessary improvements in the exhibits or their display. We have been careful in making our revisions of prize lists to retain approximately 50% of the work previously listed so that the change may not be too drastic; and have made such additions or omissions as we deemed in the best interests of the Society concerned, and at the same time have advanced toward the desired end.

I would respectfully recommend that where a Society is in a position to place both professional and amateur classes on their list the competition be in favour of the latter. Allow the amateur the opportunity of competing with the professional rather than the professional being permitted to enter the amateur class.

Reverting again to the Provincial Exhibition of 1871. The necessity for good classification was apparent in the early days and is still one of the points in which improvement may be made. "We judges would report that we were put to a great deal of extra trouble and labor by the articles being scattered over the ground, and recommended that in future articles of each class be placed as nearly together as possible." This recommendation would apply to some of the Societies at the present time. Many of the Boards of Directors now have one or more ladies among their number or an associated committee of ladies who render valuable assistance in the arrangement of exhibits, and other detail work.

With the lady directors actively working in the Societies, we would suggest that each Board sending representatives to the annual Convention of the Association send one lady delegate and a rally session be arranged for the ladies where they can get together and discuss their particular interests, and make a report to the general assembly.

We would suggest that attention be given to the staging of exhibits. The entries arranged to correspond with the lists would facilitate the work of judging and eliminate danger of any exhibit being overlooked. Give more attention to better spacing, avoid crowding, label so that visitors may see the names of varieties or section numbers as they pass. See that copies of your prize list are available at each class, or at least copies of that particular class, so that visitors may become familiar with the styles and varieties of the exhibits. Do not fail to provide proper means for keeping foods stuffs in good condition. One of Ontario's prominent dairymen makes the statement, "That the present methods of showing butter are one of the weakest points in connection with this part of the exhibitions. Dairy exhibits should be kept by themselves."

Lack of competition is one of the difficulties which the judge frequently meets with, and one which the local women's organizations might help to remedy.

Late starting means hurried and frequently unsatisfactory judging both for the judge and the Society. Judging before the public is not productive of the best results. Too small awards may be a bar to a successful entry list.

The matter of a uniform loaf of bread has come under discussion and we would recommend that as far as possible a uniform size be adopted by the Societies, thereby making possible a more just judgment, and for other reasons, being to the advantage of all concerned.

There has been some criticism of judges in the matter of opening the containers of fruits, vegetables, etc. The time-worn adage still holds its full weight of truth, "The proof of the pudding is in the eating." Many of the

judges will bear me out in saying that repeatedly we have found that the best appearing fruit or other canned goods has not, when tasted, been the best in flavor. A few months ago I was interested in watching the judges of the Domestic Science work at one of our large Exhibitions, who, by the way, were two gentlemen.

A lady standing near me stepped up and addressed a remark to me in reference to the exhibits of canned fruits. She told me she thought the canning demonstrations were most helpful to the women, and went on to say that she had been for years canning fruits and vegetables and they would not keep, and when the opportunity came to attend a demonstration, her husband told her to leave everything else and learn how to can fruit so that it would not spoil. Then with much pride she said; "The judges have given me first prize on my pineapple. I have taken that sealer of fruit to seven different fairs this Fall, and this is the third year I have taken a prize on that jar of fruit." This I take it, is not the object of the Agricultural Fall Fair.

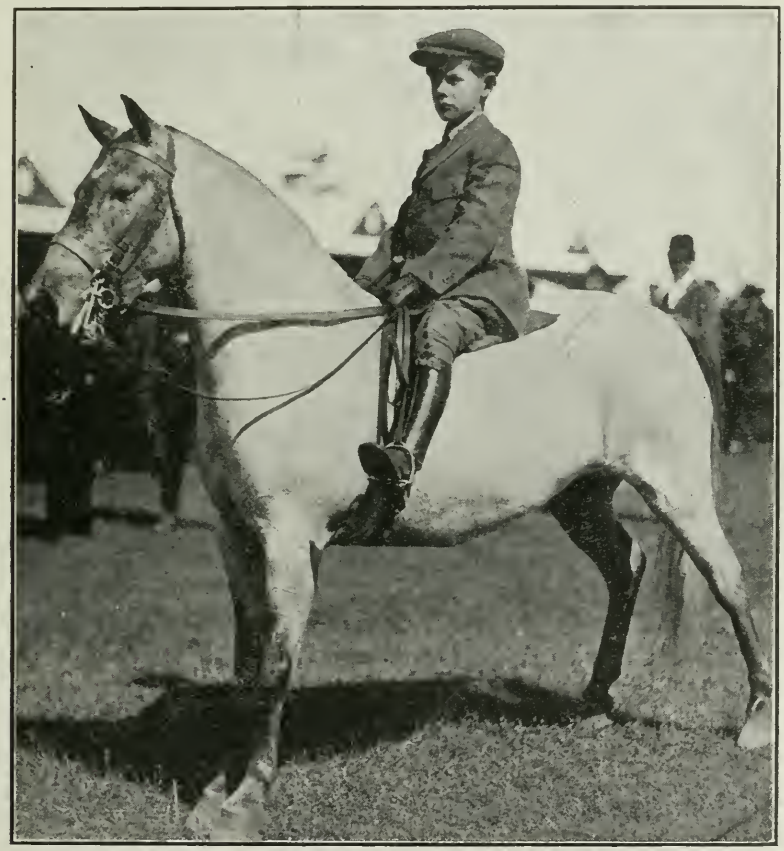
A number of judges report that there is not sufficient time allowed for the work, and they are required either to make a hurried decision or to leave the work incomplete. We feel this is not in the best interests of the exhibitors, the Societies or, the Department, and would suggest that this matter be given attention, and, if at all possible, the work be so arranged that the judge may have a reasonable time to make her awards. There is also the point of one judge being given all the lines of work in the Ladies' Department. This is a matter of no great difficulty in many cases but where there is a large exhibit of Domestic Science work and an equally large number of entries in the needlework and art sections, the Society would find it advisable, I feel sure, to secure the services of an additional judge.

I wish to refer to one other point before closing. Objection has been made in cases where the judge has "withheld awards in some cases, especially to a local exhibitor who gives great support to the Fair." The Departmental judge does not and should not recognize an exhibitor, local or otherwise, except by merit of her work. When an exhibitor is allowed to make an unlimited number of entries in each and every class and section, she should at least be sufficiently familar with the different styles to make correct entries of her work, and should accept the judge's decision where there is no competition in the sections where she may have several entries. An exhibitor should not, we think, except in an exceptional case, be allowed to make numerous entries in each and every section.

There has been a wide diversion of views in the past as to what constitutes a good loaf of bread, a delicious cake or a perfect jelly. The adoption of score cards and uniform valuation would do much to remove the dissatisfaction that at times has existed. If the scores can be attached to the exhibits, so much the better, especially in the case of the prize winning exhibits. For convenience the score points might be printed in the back of the prize list.

Efficiency is the key-note of success to-day, whether in the home or in the state, and much assistance may be given to the women of Canada through the Ladies' Department of Fairs and Exhibitions, through which department we are endeavoring to build up the homes of our country by upholding high standards of Home Economics.

Today there comes to the Association of Fairs and Exhibitions, one of the greatest opportunities of the ages. If we could make this a "Made-in-Canada" year, we would give stimulus to the Trades and Commerce Departments, and aid the Department of Finance to turn millions of dollars into our own coffers, instead of building up the treasury of other countries, as well as prove to the world at large that Canada is prepared not only to give to her citizens the goods they demand, but that she is prepared to offer to other countries as good or better goods than they can purchase elsewhere, at no higher cost, thus proving ourselves a valuable factor in the National life.



A Youthful Exhibitor.

Permit me to thank you for the co-operation and support which you have given, and I trust will continue to give, to the Ladies' Department of Fairs and Exhibitions.

Miss Galbraith: I would like to emphasize the importance of efficiency in judges that the high standard may be maintained. New workers are being added to the staff from time to time and an Annual Short Course would be a most helpful means of securing uniformity of judging, without which we cannot make any real advancement.

Uniform valuations through the use of score cards is another line which cannot be too strongly advocated. The staging of exhibits, attention to spacing, and their proper classification are all of great importance in making a successful Fair.

The suggestion of sending lady representatives to the Association Convention with a rally meeting under our Supervisor, is a good one and would be of value to the Societies.

I would also heartily endorse the adoption of a uniform size loaf of bread, the testing of all bottled goods and the need of a stated time when all entries shall be in the Hall, and the adherence to that regulation that the judges may do full justice to the exhibitors as well as sustain the honour of the Department.

Miss Powell has given the Ladies' Department a fresh incentive by her keen interest and insight into the needs and possibilities of this Branch of Fairs and Exhibitions.

In conclusion I appeal to the Societies to give more money to the Ladies' Department, Ladies' Work, Fine Arts, Domestic Science, Dairy Products. Have your lists revised regularly and keep up the standard in those departments. I thank you for your kind attention.

Mr. Hunter: I sent our prize list to Mr. Wilson, and it was revised by Miss Powell. We took her hint and put ladies on our directorate, and we have six this year. That revised prize list was an incentive to our work, and we missed many of those old faces which were with us every year and had been taking first prizes. With that revised list many of them went out and did not come back again. One of them did not open her trunk when she saw the list. This is one of the best departments. If your list has not been revised it will pay you to send it to Mr. Wilson for revision.

Mr. Brodie: Our Fair, like many others in the Province, has not been kept as up-to-date as it should have been. When Mr. Lockie Wilson notified me as Secretary of the Fair that we might have the services of Miss Powell as reviser, I immediately sent the list down to her. We thought, perhaps, she might make it too extravagant, being a small Fair. Miss Powell revised our list, and did not add very much more money to it than we were already paying, and I called together our ladies and said: "It is a little more than we have been paying. Look it over and see if you would add anything to it, or cut anything out," and they left it entirely as Miss Powell had revised it. I think, perhaps, we have the most up-to-date list of any fair in the Province of Ontario. Our Directors when they met decided that we would revise every item of our list this year. We had a splendid exhibit in the Ladies' Department this year. I was surprised to hear Miss Powell say that ladies were showing fruit two or three years old. I have known men to do that with grain for two or three years.

William Scarf: I am fully in accord with Miss Powell's remarks in reference to patronizing Canadian industries. Let us go home, determined that this year we will buy everything that we can, made in Canada and make our dollar worth 100 cents of American money.

R. J. Bushell, Bath Road: When I accepted the honour of coming here today to address you, little did I think that I would have to follow such an admirable address as you have received from Miss Powell. The only reason I can as-

sign for Mr. Wilson placing me in this position was that he knows that I am as largely supported by the ladies in the Kingston Exhibition, as in any detail of the fair.

On Rainy Weather Insurance: I got my knowledge on that by advertising and by travelling. I found it in operation at Ogdensburg Fair last year, and we were, I believe, the only fair in Canada to institute rainy weather insurance on our account last year. I met with opposition from my Directors. I submitted it to the leading members of the Canadian National, they had no time to look it over. Ottawa had no time to look it up. However, I had to have the thing in operation seven days before the Fair took place, and the responsibility being thrown on me I assumed it and closed the deal by telegram to New York City.

I am pleased to tell you that we gained by it. We had a five days' Fair and it rained every day. Had it not been for the Insurance we got I doubt very much if the Kingston Industrial Association would have been inclined to finance the Association and tide it over.

Now on my prize list, on the opening page I make an open letter to the public:—

'Fairs are a public enterprise, their purpose being to keep abreast with advanced agricultural methods that our community may take front rank and cope with the revolutionizing influences and changing customs that are aunually taking place. For that purpose a time and place is set each year to bring together the products of the field and shop that stimulus may be given to these departments of labor on which rest our great national wealth. Not only does the Fair afford opportunities for educational advancement, it is a trysting place for old and young, a place to meet with and visit old friends, to form new acquaintances, and to more firmly cement the ties of true friendship. It is easy to underestimate the immense task of promoting such an important institution as the Fair, but we assure you that no effort nor expense is being spared to make the dates of this Annual Fair "Red Letter Days" in your recollection of Fairs, and the biggest, highest and best event in the history of this County. We cannot do this without your interest and your assistance. Will you give them?

"The Society desires to largely increase its membership this year also. Become a member at this time to help increase the success of the Fair and enjoy the benefits and privileges a membership entitles you to.

"Particular attention has been given to the thorough revision of the premium list this year. The departments have been enlarged, some added, and we believe that you will find each department complete in every detail. The entertainment programme is being prepared at a great expense and we can assure you that when complete it will be one of high character and magnitude. There will be many special features equally pleasing to both young and old."

How are Fairs financed and promoted? By municipal and provincial grants and by subscriptions. In some of the sections of the Province we find people are not too generous in subscribing. But, fortunately, I have found another line of support in respect to this Rainy Weather Insurance. The Government insurance is the first. I am asked to speak on both. Now, having the tenacity of the British bulldog in me, I think it only fitting that what we have we should hold. The Government gives us $10,000 to provide for wet weather insurance, and I think it is a poor business to let $5,000 of that revert to the Government.

If ten Fairs have a loss in gate receipts, give them $1,000 apiece. It is money well spent. That is what I have to say in respect to the Government insurance.

Now if there are any fairs where they would like to take up this insurance on their own account, you can insure at the rate of $1,000 for $13 ⅓ per hour. If you take four hours you pay four times that amount. You can take any hours out of the 24. With us in Kingston we took the twelve hours from nine in the morning until nine at night, and that was a lucky stroke of business, because on one of the days it rained we got in between the hours of 7 and 9, and that enabled us to get another $1,000. If you decide to go 10% you get 30% of your policy; for 15%, you get 60% of your policy. For 20%, you get 100% of your policy.

The Kingston Fair this year offers the largest prizes in the potato Exhibit of any fair in the Dominion of Canada. We offer $100 for an 11qt. basket of potatoes, divided into nine prizes, with a first prize of $25. If any of you want to ship an 11qt. basket of potatoes which you think is first-class, send them on to me and I will pay the express charges. Are there any fairs here that would like to take up this insurance.

James Tonkin, Fort William: I wish to give the figures of the portion of the Government wet weather grant actually consumed by the Societies from the years 1912 to 1920, which showed a final total of $48,895, as against the $90,000 which had been voted, and $40,000 were turned back to the Government.

At a meeting of the Board of Directors this morning it was decided to ask the Government to raise the maximum fund of $300 for wet weather to $500.

WET WEATHER GRANTS.

It was then moved by William Scarf, seconded by R. E. Mortimer, and carried; "That a Deputation wait upon the Minister of Agriculture to ask him to increase the wet weather grant to 90% of the loss suffered by a Society instead of 75% as at present, until the whole grant is absorbed."

It was then arranged that the following be a Deputation to wait upon the Minister of Agriculture in connection with the matter: Messrs. Scarf, Connelly, and Farrell.

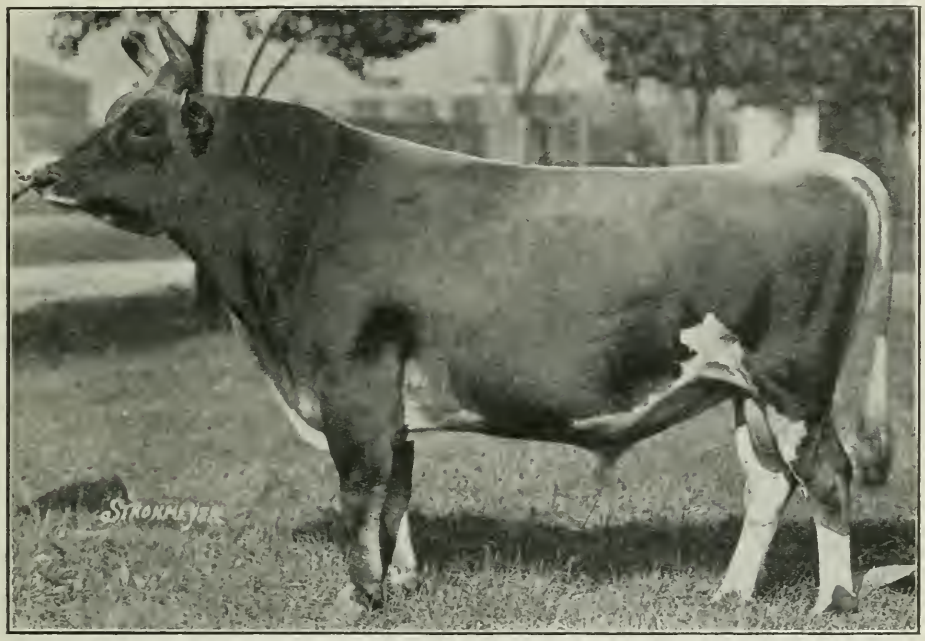
IMPROVEMENT AND ARRANGEMENT OF HORTICULTURAL SECTIONS OF FAIRS.

A. V. Main, Ottawa.

You have asked me to say something along the line of improving the horticultural end of Fairs, a very important phase of Fair work, which in my opinion has not improved as it should in the last fourteen years. As Superintendent of the Horticultural Building at Ottawa Exhibitions for several years, and more or less associated with the smaller Fairs of the Province, I would point out some adjustments that tend to improve.

The importance of selecting directors on Fair boards that are experts in their own line is worth considering. An expert on cattle and horses seldom knows much about flowers, fruit and vegetables, so for Horticultural Committees

secure those that know horticultural work. In every community there are men and women fitted for every particular work. The prize list is practically the guide book, but in many instances it is full of matter that is confusing. Have simplicity in arranging the rules, classes and sections. Do not make it a law book. Have all the rules directly under the caption: "Horticultural Department."



Jersey Sire.

1. Committee in charge.

2. Superintendent of Horticultural Building, if capable official, should have full control and have support of the dictorate. I have found this very necessary.

3. Entrance Fee. Make this distinct and not complex.

4. Date when entries will close and state when exhibits will be received.

5. All exhibits when once in the Horticultural Builidng come under the control of Superintendent or person in charge of that particular department.

6. All exhibits correctly named and cleaned will have the preference.

7. State time of Judging.

8. When exhibits may be removed.

9. Any other local conditions may be stated.

I cannot impress upon too much the necessity of a capable official in every department who understands the rules and has some knowledge and taste of arrangement, not forgetting the large measure of patience he or she must possess.

Tickets with your entry number should be securely fastened to exhibit.

The use of cards through the building where they can be easily read as regards the place for exhibits, facilitates the work. Such as Garden Vegetables. "Collection of Vegetables." "Special Vegetable Prizes." "Potatoes." "Field Roots." Cut flowers and fruits should also have their places allotted and cards in prominence, so that in rush periods everything will run smoothly.

Arrangement: Arrange exhibits where possible in alphabetical arder, such as Garden Vegetables: Beets, Carrots, Cabbage, Cauliflower, Cucumbers, Celery, Corn, Onions, Parsnips, etc. Combine each section together, this simplifies the work of judging and is educative to competitors. Taking Almonte Fair, for example, take eight entries of carrots, you would find one entry on this table another entry at the other end and other entries placed all over, whereas you would see the advantage of having them all together and would readily see the First, Second and Third. This brings us back again to "money well spent," by having the right party in the right place for arrangement. Adopt this classification all through. For all general Horticultural exhibits, I have found tables 3 feet 6 inches wide and 3 feet high most suitable. Collections of vegetables adapt themselves to the wall space. Collections or assortments of vegetables have too much latitude, they generally cover any space they want. For justice to all, give a certain space or stipulate so many kinds. While speaking of vegetables, I would refer to judging collections in particular. We exhibit too much of the trash or frills I would call it, or as I told an exhibitor in a large display, he had too much "Cow Feed." All these fancy shapes and colors of squash, tomatoes, and beets that look more like sugar beets, all the big overgrown things in the vegetable world are often found in the well named collection of curios. With competent judges, such stuff kills the good. Many Fair Prize lists want revision, wipe out these monstrosities. I was judging at a Fair last year that had nine separate sections for squash, crookneck Squash and every other squash grown. Standard vegetables should be the policy in the Prize list. Encourage the production of good every-day vegetables, Potatoes, Onions, Celery, Beets, Carrots, Parsnips, Tomatoes, Cabbage and Cauliflower. Encourage the school exhibits, and procure efficient judges that will have a standard set for judging, as one exhibitor said, "You don't know what to show; one judge wants the big stuff, another wants the 'quality first'." In horticultural products, quality and true to type are two strongholds with the qualified Judge.

After the Judging. To the general public and competitors I found the use of cards placed above the exhibits with the winners' name very useful, as for educational purposes. What has been said of vegetables is true of flowers and fruit. Throughout this beautiful Province of Ontario, I have often commented on the excellency of the flowers which beat those of the larger cities. One outstanding thing that the flowers at a country Fair lack is "arrangement." Every old gem jar is brought into use, sap pails and so on, which detracts from the beauty of the flowers. Associations should have a supply of flower vases. At Ottawa excellent vases are made out of galvanized iron which do not break, and could have the Association's name-stamp on them. Some bouquets are more like brooms they are so tightly packed. Arrange them the way they grow and you will be a winner.

For improvement of Horticulture at Fairs, I may sum it up as follows:

1. A qualified committee for Horticulture.

2. A good sensible Prize-list, that is easily understood, without monstrosities.

3. Have a competent official who will keep exhibits in their place.

4. Select Judges of experience, the best is none too good.

5. Use prominent cards indicating where to place exhibits and announce prize winners.

6. Suitable stands, receptacles for potatoes, and vases for flowers.

At our country Fairs, we want the community spirit. The Horticultural products of the Province are illimitable, and it is a duty to produce abundantly and, "carry on" the good work of Exhibitions and Fairs.

THE BANQUET.

In the course of his address at the banquet, Hon. Manning Doherty, Minister of Agriculture, said:

During the past summer I had the pleasure of going through various sections of the Province and visiting several of the Fairs in those localities. The officers of these Societies were putting their best efforts forward to make their Fairs a success. It occurred to me that the degree of success which attended their efforts largely depended upon the viewpoint that they have as to what a Fair should be. Now any words of criticism which I may utter to-night are spoken in the knowledge that they will be taken in the spirit in which they are meant. My only concern is that there shall be an improvement in the fairs throughout the Province. Now what are the weaknesses of our Fairs, as they occurred to me? One of them and I don't believe that it is capable of being remedied—is that so short a time is spent at the Fairs by those attending them. I myself have served on Fair Boards in my own county, and I know, no matter how small the fair may be, that the Directors put a great deal of hard labor into the making of that Fair a success, and I have felt that they were not sufficiently rewarded for the efforts that they put forward, in people coming to the Fair from 12 to 1.30 o'clock, and leaving the Fair grounds again at four to five o'clock. I can quite understand at that season of the year it is almost impossible for farmers to get away from home any earlier, it is almost impossible for them to remain any later, as their work has to be done at home. But in the space of time, two or three hours, it is not possible for spectators to get out of that fair what they should, considering the amount of money that has been expended.

In some of the Fairs I have felt that the live stock which is being shown was not exhibited in a place where they could be viewed and inspected by people properly. In some of them I have found the live stock to be judged in some out-of-the-way place where only a small percentage of the people could view them.

I would say that the directors of each and every fair should keep in mind the prime object of the Fair, which is to improve the quality of our agricultural production and to stimulate in the hearts of the people a desire to improve the quality of the live stock and other products. In order to obtain that, it is necessary that these products shall be exhibited to them, so that no matter whether they desire

or do not desire to view them and have the lessons intended brought home to them, I would suggest that in those fairs which have not that accommodation, they should make it to suit the purpose that it would be possible to exhibit the live stock in such a place as it can readily be inspected by all of those who attend.

I have sometimes felt that some of our fairs were largely running toward the type of what might be called a circus. I have sat on Fair Boards when this very question has been discussed, and time and time again it has been said: "Well, that is all right; if you want the people you have got to have some amusements. Now I agree with that, only to a certain extent; because I believe—in fact, from what I have seen, I feel that I can almost say that I know—that the people of of Ontario, yes the people of the Dominion, and all the British people, are keenly interested in a good quality of live stock, and if you get the quality of the live stock and if you exhibit it so that they can comfortably view them, there is no side-show that you can put on that will attract them and give them as much pleasure as viewing that live stock. Only a few months ago I had the pleasure of being in the Old Country, and the second night that I was there I attended the London Dairy Show. I went out to Islington to see it, and I was taken by the President and the Directors over it. Now in this show what happened? They had nothing but dairy breeds, of all kinds; butter, cheese and all the various dairy products; then the dairy machinery, improvements in churns, separators, etc. They also had honey, etc. That made up the show. Not an orchestra, not a band, no amusement or side show of any kind. And the first night that I was there the attendance was 17,000, and the second night they told me it was 15,000, showing me what is the real attractions at these shows—and I believe it is so in this country. Their show was well laid out so that ladies and men could walk up in wide aisles between the cattle, the regulations are very strict, and they could gain all information in regard to these animals and intelligently view them. And I say to the directors of our Fair Boards that while it may be necessary to a limited degree to put on side shows and amusements, when you find a fair with live stock entries of nine and entries of horses of about three teams and you find possibly side shows which took 20 cars to carry them all, with all due deference to the judgment of those in charge, that fair is not fulfilling the primary function for which fairs were inaugurated.

I know with regard to horse races that people enjoy them; there is no one who enjoys a horse race any more than I do. But these things should be put on to a limited degree, and it should be constantly kept in mind that the primary object of all our effort is to inculcate into the minds of the people a desire and ambition to own better live stock and to produce better farm products.

Now in the Fairs a great deal has been done, particularly the last few years, in encouraging the young men to take an interest in exhibitions. The Young People's Departments in our fairs are doing good work. Some of our men who have had their first lessons in stock judging at our Short Courses have gone on through our fairs and up here to Toronto, and have also gone on to Chicago and have done great credit to themselves and to the Province. This is a good work, and I hope to see it continued and extended. The Province of Ontario takes, of course, a very keen interest, as is shown by the grants which are made each year to the fairs of the Province. I note that the Legislative grant to the Fairs of this Province amounted last year to $126,000, the main grant being $85,000, the supplementary grants to Ontario Societies $5,000; Rainy Weather

Insurance $10,000; providing judges $22,000. Our Field Crop Competition grants from the Government amounted to $28,500; in all (prizes and expenses of judging) giving us a total of grants of $156,500.

I want to draw your attention to a new regulation which has been brought in this year in regard to our Field Crop Competition, which I think is a step forward. We have been spending considerable sums of money in the years gone by in this Field Crop work. It is a splendid educative work, because the man who produces good clean seed, nine times out of ten—yes ninty-nine times out of a hundred—will be a good farmer. Yet although this work had been continued for some several years we were not producing good seed in sufficiently large quantities to make it available in carload lots. The new regulation provides that the grain shall be judged not only in the field but also, after it is threshed, in the bin. I believe this is a step forward, and I look for good results.

Sir Adam Beck, in the course of his address, said:

For the Fairs that you represent and that you have built up, that you have made such a great success of, there is a still greater future in this country; because I, like Mr. Doherty, have faith in the future of this country as I never had before. I do not believe when you travel the world over that you will see a more prosperous, contented and intelligent people than we have in the Province of Ontario, I am very much a private man, not by virtue of my own will but by virtue of those who told me so, but whether in public or private life, I have always been intensely interested in the fairs of this country. I have had very much pleasure and joy, my family included, in the competitions that we have taken part in in this country, in the United States and in Europe, to see the great success that could be achieved by the product of the farm by way of horses in the Province of Ontario; for I have the proud satisfaction of never having exhibited in the past thirty years any other horse but one, a Canadian horse bred in the Province of Ontario, and within a distance of 100 miles of my own home. It is one thing to buy a horse in Ireland or France or the United States and win with him; but it is another thing to take the product of a country, and in thirty years demonstrate that the Province of Ontario has produced that horse. When a horse can compete at the Olympia and pull down eleven prizes, six of them firsts, it pretty nearly demonstrates that you can produce that line of animal as high class, as intelligent; because a horse without intelligence is of little value to any community in any use he can be put to. And when you hear twenty to twenty-five thousand people cheer him because he is a Canadian horse, you have some idea that we are appreciated in the Old Country.

I am glad to say that in the thirty-eight years that I have been exhibiting I have enjoyed no fair more than our local fairs. My only disappointment was at Wallacetown last year when we had three or four days of rain and we had to take our horses home without showing them.

The Fairs are a great incentive to improve the product of the farm. We are indebted to the importers of animals from the Old Land because, after all, as regards horses, cattle, sheep and swine we must go to the original stock and that is in the Old Country. In other lines, in poultry; the United States and Canada have done pretty well. We have heard from time to time that in the breeding of fowl, Canadians have been wonderfully successful.

I can not agree with what Mr. Doherty has said in regard to the midways of your exhibitions. We must have something to amuse the young people. It is all right for old fellows like Mr. Doherty and myself to say we just think of

School Exhibit at Carp.

the fine quality of a certain breed of cattle, horses, pigs or poultry. We are preaching and working and striving with every effort to eliminate the scrub male or female which is a curse to any country, and until you eliminate that you can not have the fine fairs you wish; but you have got to have a little of something to amuse the young people. One of the great calamities in farm life is that it lacks amusement, enjoyment and recreation, and we are going to try and furnish, wherever it is practical and feasible and economical, a supply of electricity.

You ask what is being done, I hurriedly got together a few figures at six o'clock, and that is part of the reason why I was late tonight and for which I apologize.

The Hydro has been in actual operation for about ten years in this Province. We have been twenty-one years trying to get a supply to twelve municipalities.

It is partly true, that it is financed largely by the Province of Ontario, that is the transmission stations. The lines in villages, towns and cities are constructed by the funds from the debentures issued by the municipalities of the towns, villages and cities, and these municipalities have enormous amounts of money invested in these distributing plants, and they assume the whole liability. Absolutely every dollar we spent in all this time is their liability, except the Trent District. If we do not collect revenue sufficient to pay the interest, to pay the sinking fund, and it is only 30 years and we have made ten payments now on some of it, five on others, then the taxpayers will be compelled to pay. The only call that could be made upon the people of the Province of Ontario is if the revenue is short and the municipality becomes insolvent; then the Province of Ontario, by virtue of a lien upon all these revenues, becomes liable. We invested $164,000,000 in Ontario. I do not call it a liability at that, I do not call it anything so harsh because since its inception every municipality, with the exception of a few small places where the consumption of power has dropped instead of increased, have met all their obligations out of revenue. Never in the history of this great work has one single taxpayer or one municipality been asked to contribute a mill of taxation on account of that municipality failing. It is the users of the power in the Province of Ontario that are paying this great debt to the Government of the Province of Ontario and to the Hydro Commission who have assumed enormous liabilities in the acquisition of these plants. When we acquired the Ontario Power Company some odd millions of that debt was bonded which we assumed. In the Trent district we assumed $8,350,000 of a bonded debt. That system, which was losing some $75,000 per year has now made every dollar of interest levied against it, as well as sinking fund and taxation, and that will be paid off and belong to the Province unless they are ready to turn it over to the municipalities. Unless a substitute becomes available to the people of this Province that is cheaper than electricity generated hydraulically by the falls of this country, it cannot fail to pay for itself.

Please remember that the Province of Ontario is in a more unfortunate position in this one respect than any other Province. The Province of Quebec is close to the coal fields of Nova Scotia, the Provinces of the West have their own coal fields, many of them undeveloped, but up to the present in the Province of Ontario there is not available a pound of coal nor a coal field. We are more or less in competition with the United States, and we are now in competi-

tion with the Province of Quebec. Not more than a few days ago I picked up a paper, and I saw a statement by the president of the Electric Company that practically controls the electric power of the Province of Quebec: "We have more available power than the Province of Ontario and very much cheaper." If it is cheaper why is it, except that these companies only contribute 5 cents per horse power as a rental to the Province of Quebec, while in the Province of Ontario I am not just sure of the exact figure, but I imagine it is in the neighborhood of about 40 or 50 cents per h. p. and we are also paying a large amount to the Dominion of Canada.

Not one of the water powers we are using, was vested in the Crown when we were obliged to acquire them, and the municipalities had assumed the

Strong Ayrshire Type

debt, as in the last purchase that we made of $32,000,000, and we are only now beginning and will have available on September 1st, the product of the first horse power of the Hydro Power Commission.

The question is raised frequently that the water power should bear a fair revenue to the Province of Ontario. We have a few water powers that belong to private individuals. We bought Eugenia Falls from a company that had bought the rights of the people who lived there for some $60,000. We bought these rights back for many millions of dollars. We have had to buy from the corporations which secured these rights from the Government many years ago.

Sir Adam then sketched the history of Hydro development in this province and outlined plans for the future.

The Treasurer's Report was read by Mr. Scarf in the absence of Mr. Peart.

Moved by Mr. McDonald, Seconded by William Hickson that the Report be adopted. Carried.

Report appears on page 6.

SHOULD CERTAIN LINES OF AMUSEMENT BE SELECTED AND RECOMMENDED BY THE FAIRS' ASSOCIATION?

A. M. Hunt, London.

I notice the subject assigned to me is put in the form of a question. I take it for granted that it is put in that form by those who arranged the programme, not so much with the expectation of having a direct answer to the question as to bring out a general discussion on the question of amusements at our Fairs. I will endeavor to be brief and thus give plenty of time for discussion as I believe more good can be accomplished by that than by a lengthy address.

At the Annual Convention of the American Fairs and Exhibitions Associations held in Chicago last December, which I had the privilege of attending, one of the speakers made this statement, "That of all the people who attend the different Exhibitions 80% went for amusement and 20% for education." These figures at first thought seemed to me to be wrong, but they were not challenged at all by those present and the more I thought of it the more I become convinced that the speaker was not far astray. This being the case how important it is that the amusement provided should be of the right kind.

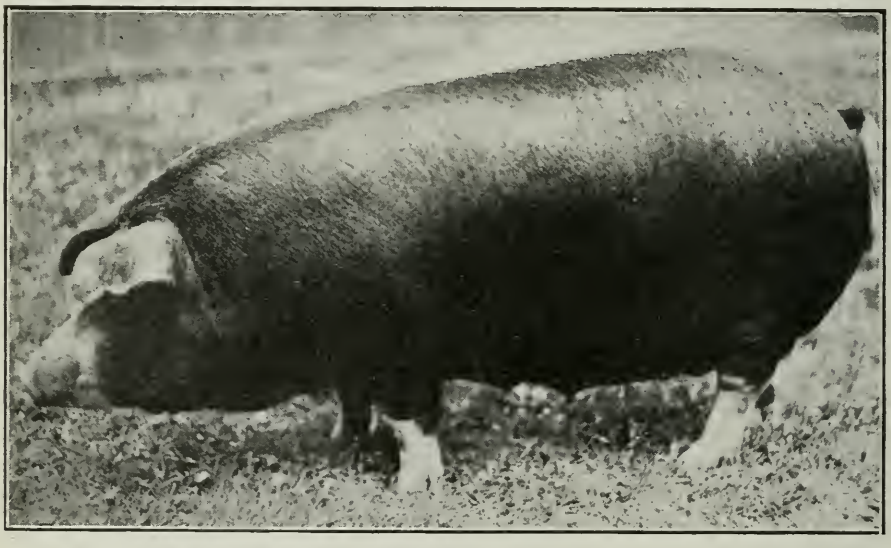
All of us who are in the Exhibition business are advertising more or less all the year with the object of inducing the people to attend our Exhibitions. We all want a crowd. Someone has said, "If you have a poor fair and a big crowd you have had a good fair, but if you have had a good fair and a poor crowd you have had a poor fair", thus judging the fair by the crowd in attendance.

When people go to a Fair they will naturally go to see what they like best. I have at times watched the crowd inside our gates with considerable interest. The large majority of our visitors come in the afternoon and evening. If you watch them you will see that they go through possibly one building and then hurry on to the Grand Stand and see what is to be seen there and after that spend perhaps an hour on the Midway and then go home and say they have been to the Fair. They will express their opinion about it as to whether it is a good Fair or not by what they have seen. As a matter of fact they have entirely overlooked the main features of the Exhibition and do not apparently know or care that there are thousands of dollars' worth Live Stock, and exhibits of various kinds worth thousands more, on other parts of the grounds that they have not seen and apparently know nothing of. Of late years the larger Exhibitions have what is commonly known as the "Midway". This seems to have become a necessity.

I well remember one year in our experience when the Company under contract failed to come, and we had no time to secure a substitute. Our Exhibition went on just the same, but there seemed to be general dissatisfaction, or shall I say disappointment among our visitors because of the absence of the shows.

I believe the average man, young or old, who goes to our Exhibitions puts five or ten dollars in his pocket just for spending money. He makes up his mind, after working hard all summer, that he is going to have a good time and see what is to be seen, and he is fully aware at the same time that he will not get half value for his money. If he goes into a side-show and it is a fake he comes out smiling just as if he had had his money's worth, and if his neighbor happens to meet him and he asks if it is good he will tell him "Fine, be sure and go in and see it." All Midway shows are not fakes by any means. There are many of them really educational and well worth the price of admission.

With regard to what we call the "Free Attractions" before the Grand Stand, our great difficulty each year is to get something new. We have our trials of Speed and Live Stock Parade, both of which are of interest, but our audiences are large and varied. Their likes and dislikes are very hard to meet. Take ten thousand people on a Grand Stand twice a day, an act that pleases some is



Poland China

considered by others as not worth seeing, and thus we are up against all kinds of criticism. Of course, the only sane thing to do is to make an estimate of how much money you can afford to spend on that kind of amusement and draw up your programme accordingly, not forgetting to provide plenty of good music, which, to my mind, is the best possible entertainment which can be provided at any Exhibition either large or small.

I am quite well aware that what I have said applies more particularly to large Exhibitions. With regard to the County and Township Fairs, which I take it, is what the large majority of you are interested in, I do not hesitate to say that I think your attendance would be increased if, in addition to your regular exhibits, you will provide some amusement features. Many of you no doubt do. I am quite well aware that there are two reasons that make it difficult for you to do this. One is the expense and the other is for a one or two day Fair it is difficult to obtain suitable acts.

Coming back then to the question forming our subject: I would give a definite answer to it and say "No". I do not think it advisable for this Association to select certain lines of amusement for all your Fairs. Local conditions vary considerably and no person or association knows how to run your Fair better than those who are elected year by year in your own locality. I think it is quite right for this Association to advise and have some official oversight of all Fairs; but when it comes to the entertainment part, in my opinion, each Society knows best what it requires, of course, taking it for granted that all amusements provided will be clean and right and above criticism from a moral standpoint.

I will not take up further time but would like to hear a good discussion on this subject and will be pleased to answer any questions you have in mind if possible.

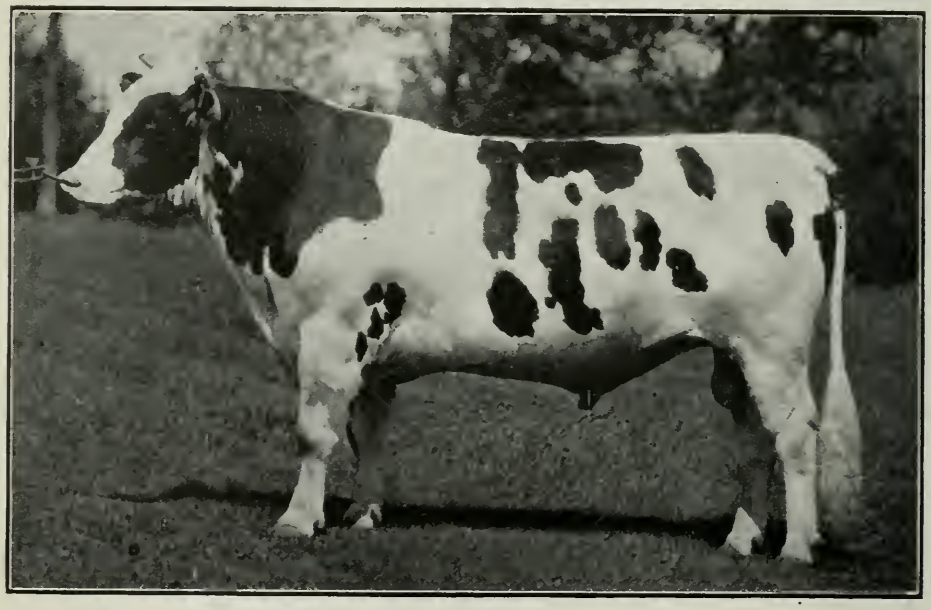
W. Scarf: I take exception to the remarks by the speaker. He was speaking in regard to Americans and not Canadians when he said that 80 per cent. went to the fairs for amusement and 20 per cent. for education. As far as the country fairs of the Province of Ontario are concerned, the figures can be reversed, and we can say 80 per cent. go for education and 20 per cent. for amusement. We have in the Province of Ontario many agricultural fairs which provide no amusement. It may be that at the Toronto, London and Ottawa Fairs they get their attendance from amusement seekers, but I would not for one moment hesitate to say that is not at all the case with the small fairs in Ontario.

W. G. Marritt: You heard two conflicting statements from the two speakers—one is in regard to the 80 per cent. that goes for amusement and the other speaker said that is not right. I may have to come in between that and say something different. I believe that the amusement question for our Fairs is of great importance, and I believe that it should be taken up seriously, not only by the Fairs' Association but also by every individual fair throughout the Province. The first speaker was probably speaking chiefly about the larger fairs, and what we have to deal with is mainly the smaller ones, and I believe that it would be to the best interests of the fairs of the Province for the head organization to recommend certain lines of amusement for our smaller fairs. But I do not believe that it would be possible to recommend any line of amusement to our fairs the way the organization is formed today. We have all these districts here from No. 1 to No. 12, and for each one of these districts there is a director, but I believe before the Fairs' Association can recommend any definite line of amusement to these fairs that we must have a better organization in each district, and each fair in that district must come at a certain time, so that if some form of amusement is recommended for these fairs it can go from one to another. If we had in each district a strong executive representing all the fairs in that district, then our head organization would recommend certain lines to that district, then that organization could carry out that form of amusement to all the fairs in that district. I remember well the first fair I ever went to, and my chief recollection is what I saw on the grand stand, and I think that the children of to-day go to the fair with that idea, and we have to cater to that element in human nature, and I believe that we should recommend certain things to our fairs for grand stand performances.

One of the speakers referred to the great cost of these amusements, and the only way that these can be cut down is for that amusement to follow a circuit in order that the cost may be cut down to the individual fair.

I do not see why it would not be possible to carry on some line of moving pictures through a district. We all go to the moving picture show, and we are all impressed with it and we are all educated and amused and I do not see why throughout this province, in each district, there should not be a circuit for a moving picture show which would go around to the various fairs. Let the films be educational as well as amusing. I believe something of that kind could be followed out.

There are many forms of amusement. There are educational amusements. I have been amused educationally at certain fairs, and I believe that the people who attended in the Province of Ontario the show in our county last year were



Holstein Bull of fine Milking Strain

amused most by thirty or forty boys judging horses, with no one to interfere with anything—the people were interested. After the horses were judged they all posed for their pictures, and here was the judge giving decisions, and also the Minister of Public Works who had given the prize. And I believe those people were all interested. I believe we could recommend certain lines along that way. In another way I was displeased when I saw stock judged in a certain way and when the prizes were awarded and the stock never brought out at all, just the judge standing there and handing the ribbons to the men who secured the prizes. Then I was pleased when I saw a herd of Holstein calves take the herd prize against five or six other Holstein herds. It seems to me it is encouraging to the younger boys to take part in this live stock exhibition. This Holstein herd which got the prize was brought about seven miles by two boys and won the prize against all the other herds.

I believe, that the Executive should recommend certain lines of amusement to each district and each district should have an organization which should carry out that line of amusement which would be most suitable to the district.

MR. LANGFORD, MAGNETAWAN: I do not think it is up to any Society to dictate what another should do in the way of amusements. It is up to themselves. Our grant comes directly from the Government for agricultural purposes, so that I think whatever a Society feels inclined to do in the way of putting on amusements, it is up to them.

THE CHAIRMAN: There is no disposition at all for the Association to dictate. It is purely that they might recommend.

It was moved by MR. ROSS, Fort William, seconded by MR. WILLS of Hastings County: "That this matter be left to the directors of each division." The seconder remarked that he thought the directors of the small fairs should have the privilege of selecting their own amusements. He tried and did stop a fakir from operating on their grounds one year, and a director from a nearby district told this man he could come to their show.

It was here moved by W. E. SMALLFIELD, seconded by J. F. GIBBONS, in amendment to the above motion: "That the Executive arrange to investigate the various amusement companies and report to any fairs who wished to write in for such a report."

MR. BULL suggested in connection with this that in order to simplify the work of the Executive in regard to this, the secretaries of the various Societies might write in and report on their amusements, and how the various companies handling same had worked out.

Another member stated here that both the motion and the amendment were unnecessary as the laws of this country were against gambling, and all the Societies had to do was to have their police on the job. He suggested that each individual fair work out this question of amusement for itself.

J. LOCKIE WILSON: I think you are putting some amendments and resolutions which are not going to amount to very much. You ask the Executive to look up these shows and find out what would be all right and recommend them. How are we going to find out anything about these ? Every fair in this Province has the right to select its own kind of amusement. If they select illegal ones the law should interfere. I don't think that you can put this in the hands of the Executive and ask them to decide what is a good show and what is a bad one.

W. E. SMALLFIELD: This Association is here to give service. It would pay to have a man investigate for a year or two the various managers of these concerns, what sort of shows they put out. We don't allow gambling in our show.

ANOTHER MEMBER: It is the duty of the Provincial inspectors who attend every fair, to see that objectionable features are not introduced. Between those provincial detectives and the local boards they could regulate the amusements to the satisfaction of their society and of the entire Province.

MR. FALLOWS, PARIS: We have no trouble in keeping away any of these amusements. The trouble is we cannot secure them. We have the best agricultural fair, I might say, in our county but we cannot get anyone to come to our fair. We stopped these amusements some seven or eight years ago.

MR. HOWARD, TILLSONBURG: It seems to me the resolution of Mr. Smallfield called for a bureau of information. I think that is desirable, but is it practicable?

ANOTHER DELEGATE thought the fall fairs must have some amusement and asked if any of the delegates had had amusements that they could recommend.

J. LOCKIE WILSON: I would like the views of the convention in regard to the appointing of special constables to regulate side-shows and prevent gamblers and fakirs from operating on fair grounds.

MR. BUCHANAN: We have nine societies in our county. We have thought of banding together and hiring a detective to go on at each of the fairs and thus relieve the directors of the responsibility. We have a town constable who is working on the fee system, and of course he is right on the job. But in other places it is not so easy.

DR. MORROW, MAXVILLE: I think this question can easily be settled by each individual fair. The circumstances are very different in each division. The way to do is to allot these operators a certain space and make them stay within that. Then it is not hard to keep them under observation.

School Exhibit, Winchester.

Moved by MR. HILL, seconded by MR. MILL, *"That the recommendation of Mr. Wilson re the appointment of a man by each Fair to investigate conditions and keep fakirs and gamblers from operating on the grounds be endorsed by this Association."*

J. LOCKIE WILSON: We are going to hold the Societies responsible for this year anyway if you allow gambling on the grounds. The directors will be held responsible, and you will lose your grant. But I want to have this resolution from you agreeing to appoint a special officer whose whole duty it will be to look after fakirs on your grounds, and have them arrested promptly on detection and have their gambling devices confiscated and destroyed. By passing the resolution you could take it back to your Societies and say that the Central Association and the Superintendent of Agricultural Societies have recommended it, and if you do not do it you will lose your grant.

The resolution was then carried.

One Member here asked if the constable would be responsible or the Board of Directors.

J. Lockie Wilson: Certainly the Board of Directors are responsible. If they appoint a inefficient man to do the job they are responsible for his work. It is your business to appoint a live man whom you can trust. Don't appoint one who is blind in one eye.

Mr. Hunt announced that they had in connection with the 1921 London Exhibition decided to put on a Girls' and Boys' Competition. He distributed circulars among the members giving details, remarking that the object in view was to get the boys and girls interested so as to keep them on the farm. For further information regarding this Contest he invited members to write to him A. M. Hunt, Western Fair Association, London, and he would be pleased to give full information.

Moved by Wm. Hickson, seconded by E. F. Stephenson: "1. Resolved, that in the opinion of this Convention of Fairs & Exhibitions the proud position Ontario occupies to-day as an Agricultural Province is principally owing to the good work which has been done through the instrumentality of our Agricultural Societies.

"2. That while, five years ago, this Association had intended to make an appeal to the Government for an increased grant, this was not done owing to the war.

"3. That while Ontario has a larger population than the other Provinces of the Dominion, yet the Government Grants to Agricultural Societies are larger in these Provinces than in Ontario.

"4. And also working expenses have more than doubled during the past four years.

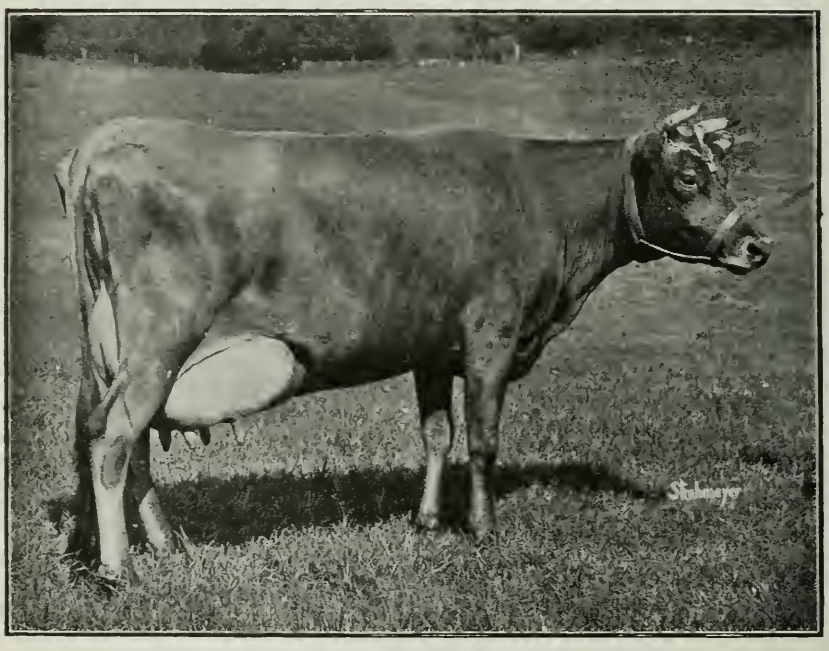
"Therefore, taking the foregoing facts into consideration, and the importance of giving the utmost encouragement to those who are engaged in agricultural pursuits, this Association memorializes the Hon. the Minister of Agriculture to increase the annual grants to Agricultural Societies to $125,000, and that the Ex-President and the 1st and 2nd Vice Presidents be a Committee to submit our request to the Minister of Agriculture. Carried.

There was a good deal of discussion in reference to the resolution which had been passed the night before regarding wet weather insurance, and which resolution merely provided that the portion to be given to a society be increased from 75% to 90%, but did not stipulate any maximum whatever. Mr. Connelly pointed out to the convention that the maximum now was $300, and he felt if one society was unfortunate enough to sustain a loss of, say, $500, and there were not enough societies which suffered from wet weather to absorb the whole $10,000 grant by the Government, that such societies which sustained a loss should receive a grant up to $500 instead of returning to the Government such a large amount of money each year.

Moved by Mr. Gilroy, seconded by James Malcolm, Dublin, *"That the maximum of Wet Weather Grant to any particular Society be raised to* $500 *in place of* $300 *as at present and the percentage be* 90% *instead of* 75% *provided that there were sufficient funds for that purpose."*

Moved by C. R. B. Hill seconded by Jas. Tonkin, "That the Parliamentary Committee of the Executive be asked to take up the matter with the Minister— the advisability of the enactment of Legislation, to protect Agricultural Societies who are opening their grounds for the use of the community, against liability for damages for accidents which may occur on the grounds while being used by the community." Carried.

The Committee appointed to interview the Minister was empowered to take up with him the Wet Weather Insurance resolutions which had been passed, and also to request that the short courses at Guelph and Ottawa be continued as in previous years.



Jersey with well-developed Udder.

DIFFICULTIES OF RURAL FAIRS AND POSSIBLE REMEDIES.

A. R. G. Smith, New Hamburg.

At the Convention here last year, Prof. Barton made a remark well worth considering: "A Small Fair should be an inspiration."

To secure that result it is necessary to have good management, money, co-operation and local material.

Directors of Fairs control the destiny, and pilot the organization to service or destruction.

The first and all-important requirement of an Agricultural Society is a body of broad-minded, thinking business men as Directors, who work together for the common good, and to make their organization fill its proper place as an educational power in the community.

The Managing Director should be one capable of using his influence to produce a well balanced prize list with proper classifications.

Professor McLennan's bulletin on judging Vegetables, together with his address delivered here last year, has assisted completely in arranging proper prize lists for Fruits and Vegetables.

We would welcome from headquarters, revisions of all our Live Stock departments.

The chief difficulty of our smaller Fairs, and, perhaps, of some of the larger Fairs, is lack of money. No Fall Fair can get along without money. A society without a substantial balance is apt to become unpopular. Strong societies can make strides.

No one closely in touch with Agricultural Societies could fail to be impressed with the effect of the price of labor, printing materials and all supplies. This general situation has, no doubt, proved something of a serious stumbling block to progress. Careful examination of the statements published in the last Fairs' Association Report shows small increases in money paid in prizes, while general expenditure has risen very high.

Increased Gate Fees. We recommend higher admission fees. We tried it last year.

A careful consideration of the column showing Municipal Grants in our last report is interesting. Several Counties are outstanding as a result of organization of local committees to secure larger grants. Many counties have evidently given small grants and several rich Counties lamentably small grants. Several years ago, Waterloo was the second lowest in the Province. The Agricultural Societies there started to work together. Next year's report will show average grants of over $500 apiece. The Societies in that county find that by working together they receive more consideration by the Municipal bodies before whom they appear.

Grants from Municipalities suggest that the representatives of County Councils, Townships or other bodies making grants should be guests, shown by prominent officers of the Society. Confidence in your work is developed and maintained when the custodians of the public funds are thoroughly acquainted with the objects of our organizations and are entitled to knowledge of how grants are expended.

Nothing destroys confidence in Fairs more quickly than to advertise special features and not have them. It is better to have more than advertised.

The arrangements of halls should be carefully considered. Artistic decorations, with divided sections with educational booths intervening showing Health Exhibits, Women's Institutes, Travelling Libraries, Egg Exhibits, Poultry Dressing Demonstrations, Experimental and Agricultural Farm, and many others, add great interest to the halls.

The development of Live Stock Judging Courses calls for Stock Judging Classes. In my opinion they are best conducted under the direction of the District Representatives, who are usually in charge of that work during the winter months, and have the necessary supplies.

Advertising. This is important. Newspaper advertising is expensive but effective. The poster has its place. We have great faith in card advertising.

Stamps should be bought at the post office where the cards are distributed. Auto transportation has widened the area where it pays to advertise. Rural mail men distribute programme cards in every rural mail box. Each card is stamped but not necessarily addressed. We recommend this system. The business man in his office might not pay any attention to cards of the kind, but our most effective advertising is done by the boys and girls who receive complimentary admission tickets. They read and almost memorize every item on the card advertising the Fair. Leave it to the children to draw the attention of the older people to the features of your Fair.

There is always a great field for new departures: There have been great changes in twenty years Special exhibits might now be made in Silo Corn, Sugar Beets, New Grains, Grasses and Clovers.

Baby Shows should be held by every Agricultural Society in the Province. Nothing creates more interest. Two classes—one year and under; over one year and under two—with a silver mug for the sweepstakes will give you one of the finest entertainments you have ever had. Every mother whose baby gets a prize agrees with the decision of the judges.

There is something to be said in favour of spending as much money as possible rather than to award goods for prizes. Our Government grants are arranged on the basis of average expenditure for Agricultural purposes for three years. This matter has been taken up by several Societies and explains why their grants have been increasing every year. Twenty five per cent. is good interest.

Some Counties base their grants to Agricultural Societies on paid membership. This, I think, is a mistake. I think it should be made on the basis of expenditure for Agricultural purposes.

Gate receipts are important. Should wet weather occur. the grant is based on the loss in gate receipts as compared with the average of those for three previous normal years. It is important to have as large gate receipts in cash as possible. The sale of membership tickets with two or three admission tickets is not a good plan from the weather insurance standpoint.

I would like to see more Spring Seed Fairs. We hope to put on a class for Township Schools at our Spring Fair.

I hope the matter of increased Government grant will be placed before the authorities. We greatly appreciated the grant in 1919. The department, under Hon. Geo. Henry, added $10,000 to our usual grant of $75,000. We are handicapped in trying to extend our prize lists owing to increased costs. I think the Agricultural Societies in the past have done splendid work to interest the farmers on the side-lines and concessions in improved livestock, better grain, farm conveniences, home improvement, art, literature and science.

I think it would be a good plan if the Counties and Municipalities in some sections were approached for increased grants.

Perhaps the officers of this organization could gather some valuable facts regarding grants made by many Municipalities and have them in pamphlet form for any Society that wished to secure Municipal assistance.

In conclusion I am of the opinion that no outstanding progress can be made in our Agricultural Society work unless we gather lessons of progress from other Societies, not only of our own Province, but of the Dominion, and, I will venture to add—of the world.

"New occasions teach new duties;
Time makes ancient good uncouth.
They must onward press and upward
Who would keep abreast of truth."

R. S. DUNCAN: The splendid address which has just been delivered furnishes food for much thought. If some Agricultural Societies represented by the delegates here have had a struggling existence, I think some of their difficulties at least have been diagnosed and the prescription has been written to be passed along to the Board of Directors to be administered. There is really nothing left for me to say after this excellent address. I just wish to corroborate everything that has been said by the previous speaker. The purpose of the Agricultural Exhibition, of course, is education and social intercourse. Broadly speaking, the Exhibitions raise the status of agriculture to a higher plane, and fairs ought to create a greater interest in farm life, particularly among the boys and girls of our rural communities. They ought to be an incentive and inspiration, not only to the individual, but also to the community at large. When thinking of the difficulties with which we have to contend and the possible remedies, we want to remember two things: first, that there are two classes of people, visitors and exhibitors, and if we keep these in mind and put our shoulders to the wheel, and adopt some of the suggestions which have been thrown out, there is no doubt that the small fair and the large fair as well will be successful in the coming year.

What are the difficulties ahead? You know them. If any of the small fairs have had a struggling existence, I think they have so much now in their hands in the pointers given by the previous speaker, that they can go home and largely overcome them.

In summing up these difficulties of the local fairs, they are these:

Bad management.
Unattractive Prize lists and programmes.
Insufficient funds.
Poor grounds and accommodation.
Lack of clean, healthy, wholesale amusements and attractions.
Poor judges giving dissatisfaction.
Wet weather, over which, of course, we have no control.

Now perhaps these do not apply to each of the Societies present, perhaps they do not apply to the great majority of the Societies, but if they do, then you have the remedy in your own hands.

I would like to emphasize some of these salient features: First. Good Managers: you want a Board of Directors who are alive, enthusiastic, energetic, wide awake, and I certainly think it would be an excellent thing to have the town people represented on the Board of Directors as well as the farmers. You know the farmers' interests are paramount, not only because of the farmer himself, but upon his success depends to a large extent the prosperity and success of the country as a whole.

Then we want an attractive prize list, revised annually. You have the matter in your own hands. The Ladies' Department of the prize list can be revised through Miss Powell, who is attached to Mr. Lockie Wilson's Branch. The Vegetable, Horticultural Section, can be revised through the Vegetable Specialist or through the Department of Horticulture. Live Stock through the Agricultural Colleges, Breeding Associations or through your superintendent. I think suggestions along these lines would be very helpful in enabling you to have an attractive prize list.

Then there ought to be a special printed programme of events, particularly is this true of judging horses. I remember distinctly one Agricultural Society which at one time did not have any special programme for the judging of horses. Later on when the programme was printed, with prize list in front, and distributed to the exhibitors, and a small leaflet prepared and distributed to the men and women who came to visit the fair, the fair grew in attendance, and interest, and the exhibitors were very much pleased.

In connection with accommodation, the building should be clean and sanitary—stands, display tables and cases with exhibits attractively arranged. Don't forget flags and bunting.

As far as stock is concerned, particularly cattle and horses, stables and hitching posts ought to be arranged. Perhaps in smaller fairs they have not sufficient funds to put up stables.

For sheep and hogs it seems to me it would be desirable to have covered pens or sheds with open sides. If these cannot be arranged, they ought to supply hurdles for pens, which can be taken down and put into the building under cover until next year. I dislike to see hogs judged in wagons as they come to the fair. I do not believe it is possible for any man to judge hogs properly when they are in wagons and not taken out for inspection.

All Agricultural Societies should include loading platforms for stock. This would assist in unloading hogs, cattle and sheep, and would do away with the judging of hogs in wagons.

I shall not mention anything about amusements except this: They should be clean and wholesome; and I think it is absolutely necessary, not only in the small fair, but in the larger one, to have some sort of amusement for the young people and the townspeople, because you want to get the townspeople to attend, to swell your gate receipts. I like the idea of issuing complimentary tickets to the pupils in the schools and also the teachers in the schools in that particular township. Once you get the boy and girl interested you will naturally get the parent interested, and you cannot keep them away from the fair. It would be well to have a display of agricultural products from each school and award a prize for these. I would also like to see special classes for children's exhibits in your prize lists. Last year, I understand, Professor Barton made the statement that the Agricultural Society should be 50 per cent. for the young folks. Now the school fairs are conducted all through the province and they have their place. But if you will prepare special classes for the boys and girls in their schools, you will have splendid products and you will increase interest in your fair.

During the past year we have had live stock judging competitions for young men, conducted by a great number of agricultural societies throughout the province. At some of the larger fairs, at Ottawa, Toronto and London, we had 938 boys judging all classes of live stock, and at some of the smaller fairs the num-

ber of contestants varied from ten to forty. I do not think it is absolutely necessary that Agricultural Representatives arrange to conduct these judging competitions. Each representative is particularly busy in his own community, in his own county, and he ought to arrange to conduct judging competitions and make exhibits at the fairs in his own county, and if he is doing that, he cannot be over helping a representative in an adjoining one. He can, however, get the co-operation of the directors, and they in very many cases are very capable and efficient men, and would be only too glad to assist in a matter of this nature.

The judges on live stock at these fairs can very well assist in giving decisions in the judging of various classes of live stock and mark the papers.

Now for the girls: I would suggest Girls' Canning competitions such as have been held in four or five centres during the past year. The number is spreading and interest has been aroused, and I think they could be very well conducted in connection with your fairs.

Someone mentioned Calf Clubs. We have 15 or 20 calf clubs in the Province and these boys and girls are becoming interested in good live stock, and I think that classes should be arranged for at the fair for the boys and girls' calves, and for their sheep, and for their pigs.

In conclusion, don't be afraid to boost your fair. Be enthusiastic.

"Boost and the world boosts with you,
Knock and you're on the fence:
For the booster gets sick of the man who kicks,
And wishes he'd kicked himself.

Boost when the sun is shining,
Boost when it starts to rain.
If you happen to fall, don't lie there and bawl,
But get up and boost again."

Mr. O'Reilly suggested sending tickets to the school teachers to sell to the children for five cents each.

Mr. Tucker, of Stirling, said they had tried this plan and it had worked out well.

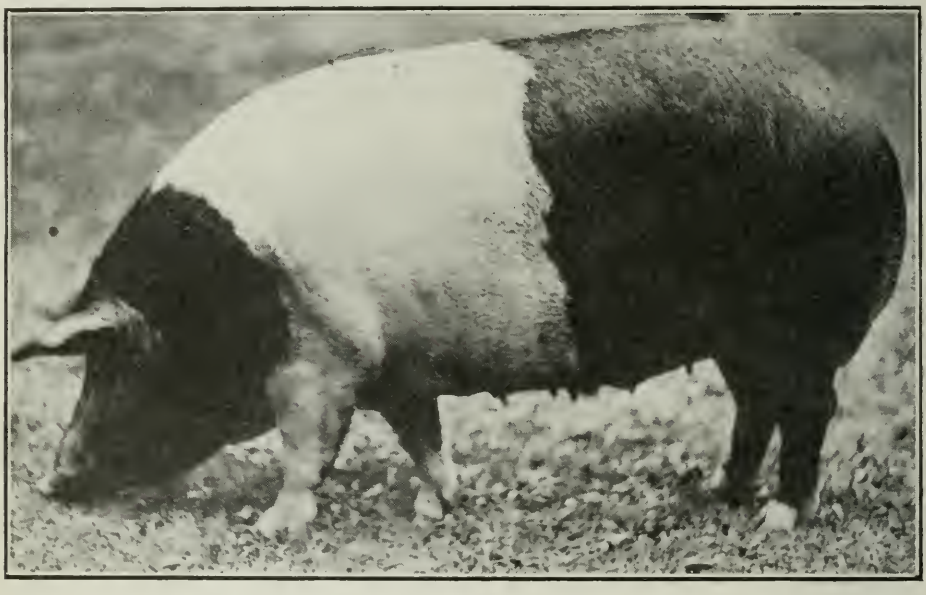
Another Member said they should send complimentary tickets to the teachers, telling them if the children take part in the parade they will be allowed in free of charge. We have twelve schools in our school fair district and nine of them on an average show every year. We pay out about $150 to the school fair. We would like to know if it would be practicable to run both together and take in the towns and villages in our county.

L. J. C. Bull: They run together in a good many cases. The object of the Agricultural Society is to encourage the children.

R. Trott: We carried on a school competition, and the three schools that had taken first prize in three different townships (and their competition was a very attractive part of our programme,) had an exhibit at their county fair. Mr. Duncan was there two years ago. It was the first year we had a school fair in conjunction with the fall exhibition. Last year we gave in prizes: $15, $12, $10, $8, $6, and $4. We had nine or ten schools parading together. Talk about

your amusements! If any of the fairs in Ontario can put up a better amusement than that fair put up, I would like to see it.

We give prizes of $5, $4, $3, $2, $1, for best sheaf of wheat. We had a relay race on the track, with same prizes and judging live stock by boys. We paid out $259, to the School Fairs. We offered $115 from our Society alone. We had a wet day and $107 was paid out, in spite of the bad day. I would not advise every Society to take in the school fair. You know you are compelled to put up $75 for prizes. Every man should be interested enough in his own school section to say: we will stand up behind our own boys and girls and pay their prize money, if he does not, he is no good. We have some schools on the outskirts of our township which have not the same advantage as the schools closer in. Every school should pay its own prize money, and we pay specials. We did so at this time.



Hampshire Sow

Mr. Trott then moved, seconded by Mr. Robt. McKellar: *"That this Association believe that in the best interests of the fairs of Ontario, the grant from our Government should be divided on a basis of* 50% *for the first* $500 *or less expended for agricultural purposes;* 30% *on the next* $500 *and* 20% *on all other* $1,000: *the maximum grant to any one Society to be as at present."*

J. Lockie Wilson: That would entail a change in the Agricultural Societies' Act, which would have to be brought before the Legislature, and I doubt very much if any action would be taken.

No action was therefore taken on this resolution.

Mr. Porter, Mt. Brydges: You will remember that some five or six years ago a resolution was passed through this Association naming a committee with the object in view of seeing if some means could not be arrived at whereby the small societies would receive a larger portion of grant. It is felt that the small societies of the Province are doing a great work and are a feeder for our large

fairs. No boy or girl is going to exhibit in the large fairs for the first time. For some reason or other that Committee were unable to get together to make recommendations to this Association, and that has gone by for two or three years, so I think that some means might be now arranged whereby the small societies could be favored. We all understand that the smaller society is more difficult to finance where there is no large town or city to draw on for gate receipts.

MR. ATKINSON, CALEDON: I believe there are a number of the smaller fairs represented here that are in the position that we were in this year. We were held up and shaken down, taken by the throat and forced to come into the Canadian National Trotting Association. We want to know if that is going to happen again next year. We don't want to be forced into this. We want to do it voluntarily if we come in at all.

MR. ROWLEY, ELMVALE: I am not very favorable to trotting anyway, but I don't like to be forced, when we fix the races and they come along and say: "We won't come unless you join the Association."

The following resolution was moved by R. Arthur Tennant, Almonte, seconded by Alex McKay, Clayton:

"That whereas in some sections of the Province natural conditions do not permit of holding Grain Crop Competitions to compete for prizes under conditions as set forth by the Department of Agriculture, be it resolved that such places be empowered to substitute some other form of competition recommended by the Government.. We would suggest some form of competition in Live Stock."

MR. TENNANT, the mover of the resolution, said if they might have three acre plots instead of the five which were now specified, for the Standing Field Crop Competitions, it would be more suitable for them. We are in just as bad a position as New Ontario in this regard.

MR. WIGGINS: advocated giving these northern counties the same consideration as was being given to New Ontario at the present time, namely, three acres instead of five.

J. LOCKIE WILSON: That is a reasonable proposition, and if you write in and describe your circumstances, we will take it into our serious consideration.

A resolution was then read which was submitted by WM. HOLMES, Secretary of the South Norwich Agricultural Society, *"Resolved that we recommend to the Association of Fairs and Exhibitions that for the future in the Field Crop Competitions (except corn), the winners of prizes be obligated to retain for sale a certain amount of grain for seed at a percentage above market price."*

MR. Wilson remarked in regard to this that you could not compel a man to keep seed.

The election of officers resulted as on page 6.

WM. SCARF: We waited upon the Minister of Agriculture this morning, and I think from what he told us that probably we will get the increase in the Wet Weather grant, that is 90% of the loss instead of 75%. Of course, it will be understood there will be no more money granted.

Another matter that it was arranged we should ask him was to increase the maximum insurance grant from $300 to $500. I think he considers this very favorably, and I might almost say that both of these matters will be arranged as you have wished.

I was on another delegation that waited upon the Premier to ask him to increase the Government grant from $85,000 to $110,000. Now I thought probably on this occasion, having a Government of farmers, we as agriculturists would just have to go there and ask for the $25,000, and he would say we could have it. He did not give us any encouragement, and he practically told us that we would not get any more money. Mr Wilson told us yesterday that we were putting up $6.00 for every dollar the Government was putting up.

CLASSIFICATION AND PRIZE LISTS.

R. W. Wade, Toronto: I am very pleased to meet such a representative body composed of men who through their influence in every part of this Province, have a great deal to do with the moulding of public opinion to make advances along the lines of agriculture. I believe that in regard to every show and the arranging of a prize list and the awards in a show, we should say to ourselves: this is a business proposition. And what is that business proposition? To make our show so attractive, and so arrange our prize list for products of the farm that the general public will receive education along that line. ,

You meet and you have practically a definite sum of money with which to carry on, and sometimes it does not seem to be enough to attract the exhibits that you require in order to make your show successful. It seems to me that the Directors of an Agricultural Society should say: "Here we have a business, we intend to promote and increase that business so that we will be able to do greater good in our community."

How are you going to increase the business: that is to say, how are you going to make your show a bigger one? You say you have only so much money, and that is true. You therefore cannot make a prize list as attractive as you would like and you are hampered to that extent. On your big fair day when you are looking over the crowds that are on your ground, how many have stopped and thought: "What are the people interested in at this show, and what are the people getting out of this show." They tell me that at those shows in Scotland where live stock is displayed (and it is not put in buildings at all, they are left outside) the public are extremely anxious, and they take a wonderful interest in looking over that live stock. Now how do our people spend their time at a show? It is of course a splendid thing to meet in a social way, but you can meet our neighbor and talk to him about the points of an animal just the same as you can meet your neighbor in the midway and spend ten cents on it.

It seems to me that if propaganda were directed toward the farmers, you could create an interest in your prizes and that interest can be created in various ways. I am going to point out one thing that surely does create an interest in the public, and I don't know whether the idea can be applied to an Agricultural Society or not. I have not the least doubt that most of you know that where a

school fair is held in competition with another school fair in two adjoining villages you have as keen a competition as in a horse race. Now it seems to me if we could carry some of that feeling, some of that interest in our shows, some interest in regard to the stock—it would have a good effect. There is a good herd, we will say, to be shown. Have something in the local papers regarding that herd, about the production of that herd, that such and such a cow will be there so that the people would like to see it. Create a desire in them to see the exhibit. Now that is your propaganda before the show.

What about your propaganda during the show, in order to make the live stock, etc., attractive? There is one way to make it attractive and that is this: If I go into a show building, an agricultural building of any kind, or go on the grounds, I see a number of animals penned—now mind I may know or I may

Worlds Champion Holstein for one and two years.

not know the breed. I walk along and I see a number of sheep. How do you make that interesting? The very fact that you are looking at something that you have a certain knowledge of makes it interesting to you. If you go along where your stock is displayed and if you have a boy who can write up a card nicely, put this up containing information where the stock is, then put up the owner's name, give him all the advertising you can. Show which animal got the first prize. It means that that man says: it pays me to show my stock off to the people. And the people who come to the show, instead of paying money for amusement are actually looking at live stock because it is put up in an attractive form.

We know very well we have two types of market hogs in this country. We have the bacon and the fatter hog for butcher's meat. Would it not be possible to create a certain amount of interest in the kind we breed on our farms. I

believe if any Agricultural Society would come out and say to some of the leading men: "We wish to demonstrate the right type of bacon hog on our Ontario farms and we must have good prizes to put up at our next Agricultural Show," that money would be forthcoming, so that you would have a sufficient amount in order to get a good exhibit at the show.

It is no good to have good stuff, of different types, and not explain the difference. If there is a first prize bacon hog a card should be up stating this. I do not believe it would be very hard to get from Mr Wilson a judge who at a certain time in the afternoon would go over the pens you have there and put them in order 1st, 2nd, and 3rd prize, and who would be willing to talk for half an hour or an hour explaining his reasons to the younger men. Because unless you can get these young men interested in the kind of live stock that they can make money out of, what incentive would there be for them to go in for better stock raising.

The same could be done with lambs.

And do that same way with your whole business, that is, get something that you can talk about. Here is something for the farmer to see, here is something to interest the farmer's wife.

In respect to your cattle: I believe that the class of men who are directors of our Agricultural Societies are a very high type of influential men in their community. If those men would hustle a little in their own community, get the men who have good stock to come, tell them that you cannot give them the prizes that you would like to give, but you wanted to build up a good show, and they will gradually get their return in the increased interest in that class of stock and in the increased prize money that you will be able to pay when the people get interested and come, there would be an immediate response. I believe the same is true of horses.

But what is the use of having a first-class article of any sort which is not properly staged? I have no doubt most of you have been at the Guelph Winter Fair, and were more or less peeved because, often times, there would be beautiful stock, but there was not an opportunity to see it. Your exhibition grounds give every one an opportunity to see. At Guelph there is not sufficient room. By properly roping in you can give everybody a chance to see.

The staging of the show helps again.

Now we come to the question of classification. I believe that the directors of every Agricultural Society should say: from an educational and from a commercial standpoint these are the classes that we should establish and we should find out from most reliable sources the exact name and description of the various classes that we put on. I refer in the cases of horses, or in the case of beef cattle, to the exact proper name and description of them, so that they will agree absolutely with the phraseology of the market or the larger show. Suppose that you are possibly obliged to restrict the number of classes, I believe that you should first get the classification determined. That is in the case of horses, sheep, cattle, swine. There should be a catering to your own exhibitors and not to the man from outside when arranging up the prize list.

Take some classes of poultry and you know you have a very long list of them. You ask an exhibitor how many birds he is showng and the man reples: "I am trying to have all kinds. I want a great many, because if I only have a few, it does not pay me to go to the show." He loads up his rig in the morning, and comes in and makes a sweep not only of your show but of every other in the entire neighborhood, for he is a professional exhibitor. We will never get the love of the show implanted in the agricultural community, and we will never get interest, as long as we just put on that kind of show. I believe that the classification as regards the poultry should be just the same as live stock. Get it on a commercial basis, that is to say: Devote your money to utility classes, because that is what you want the farmers to raise. You want it so that you have sufficient money on those prize lists, so that your exhibitors will become interested and study type. I believe that while you can not do everything, the aim should be to get down to a business classification.

I neglected to mention, that with the poultry, as well as the others, to carry on your propaganda of interest, it must be properly staged, and if anything is against that, it is the bringing in of birds any way they happen to come, of every variety. Maybe the names are not even on, the prizes are not even on, and you expect people to come in and be pleased with that. It would be just like a man trying to read a novel, and after reading the first page he had to jump to the middle of the book.

Then in regard to fancy work, domestic work, fruits, etc., it works out the same way, supply information, have the prize cards arranged so that people can see. You can soon get the women interested.

Here is one thing that I believe would add interest. On your entry form for cattle and horses there should be a place for the name of the sire and the number of the sire, and that would be available for publication. Now in the case of cattle it would not give you quite so much advantage and interest possibly. But we are going to take the case of a horse. In a horse class, if you had the name of the sire and the number of the sire, see what it means. It means that there are going to be a certain number of horses there, and it is going to be given out that the first prize winner was sired by such and such a horse, the second prize winner by such and such, and the same with the third prize winner. It puts interest into the whole which otherwise would just be one animal competing against another. And the owners of the horses would waken up and will go around looking for good material to advertise their own horse. They will get around among the farmers, and tell them that they have a beautiful yearling: and they would like them to show it.

I do not believe that any prize, from the gold watch down, booms your show so much as the good hard dollars and cents in the prize list. In Scotland, the home of the Clydesdale, there are about seven or eight large shows, and at these the sire of every animal is tabulated and at the end of the season they are all worked out, and the sire that has the most prize winners is called the "Chief" or "No. 1, Sire" in Scotland for that year. What has it done? It has given information to the public which is of value; it has made those shows of more value than if that information had not been sent out, and it has created interest and kept interest up, and it has helped boom the Clydesdale wherever the Clydesdale has gone.

We can get increased interest, and I believe it is the duty of the leaders of communities to try and create some of that interest. A few years ago we put this proposition up as regards listing the sires, and we intended to put a report out each year of the outstanding sires in Ontario; put the shows in three classes, the smaller show, the county show, and then the big show. I believe it would increase materially the number of horses at your show, and you do know that if you have a pretty large horse entry at your show it seems to attract the people.

Now, the show is there to do good, and we do have a lot of pleasure out of the show and I believe in having pleasure out of shows, in meeting your neighbors and your fellow directors. Increase your prize money as fast as your finances will warrant.

You have a great work ahead. I believe there will come a time, and it may be coming sooner than we expect, when our people as a people will take more and more interest in agricultural products, and when they do, with your help to give interest and to give encouragement, everyone will have that sense of satisfaction which comes from work well done.

THE EFFECT OF THE AUTOMOBILE ON RURAL FAIRS.

J. C. Steckley, Newmarket.

The subject that your programme committee has assigned to me is one which at first I thought was rather a small one, probably, for a meeting such as this. But after asking a few of my friends what they thought about it, one man expressed it in this way: "We are all living too fast, and the sooner we dispose of automobiles and get back to the horse and rig and travel that way, the sooner we will get back to the old fashioned fairs." Another said: "The automobile is responsible for the fairs all going to pieces." So I thought if I had to come and tell this Association those two things that I would be rather up against it.

I do feel, however, that the automobile has been intrumental in changing our rural life and also that of the towns and cities, more than any other one thing. I am going to deal with the subject this afternoon, as it affects the rural people more particularly, because I believe that the big percentage of our fairs are really rural re-unions, with the programme and the entertainment put on by the farmers and the farmers' community, because if we were to take the farmers' products out of the fair there would be very little to go and see, and you know, no matter how good a time you have at the fair, it is very easy to say after it is over that there was absolutely nothing there to see.

Now the automobile has changed conditions considerably in the rural districts. I want to mention them before going on with the effect that this has had on the rural fairs. You all know that the people are not living so isolated as they were. Farmers know not only what is going on in their own districts and locality, but also in others, and for this reason they are certainly better versed to know more in regard to agriculture and agricultural conditions. The automobile has killed distances in the country. The farmer thinks no more of driving fifty miles to-day than he did of fifteen or twenty years ago.

Living in the county of York, as I do, I can see this more clearly than you can in some of the other counties, because while a few years ago things were drawn into Toronto by wagons, etc., ten miles, now they come from the north end of the

county and people are even delivering their products into Toronto a distance of fifty and sixty miles. Then it has changed the attitude of the young people and the people of middle age. Their interest to-day is not nearly so much in the live stock as it is in the automobile, the tractor and the motor truck. And I think that you will agree with me that the farmer, and particularly the young farmer have practically taken away their affection from Old Dobbin and linked it up largely with the "gas horse,"

There is another point I want to mention in which the automobile has changed the people in the country and that is in respect to recreation. The increase in athletics in the country has been very noticeable to me in the last few years. When I am driving through the county it is a very common sight to see in some pasture field a number of automobiles and the boys having a game of baseball, football or something else, and the automobile makes it possible for those teams to compete at a very much greater distance. You will probably wonder why I mention that here, but there is something which I want to say in regard to athletics at the fairs.

I contend that these conditions and changes which are going on in the country are considerably due to the automobile, and anything which changes the conditions in the country and for the country people, will certainly affect our rural fairs, because there is no place where you can see changed conditions like you can when people come out for a holiday.

In the first place, the automobile has increased the attendance at our fairs. It is easy to draw from a larger district, and while, probably, some of the fairs have suffered in recent years from lack of attendance, any fair which is well established and well known, has no difficulty whatever in getting as great an attendance as ever before.

Fifteen or twenty years ago, whenever I went to a fair, I was lucky to get to one fair a year. I attended fifteen fairs this year, all in the afternoon except two, while years ago we would go there for the entire day. So the automobile has changed our fairs from whole day fairs to half-day ones, the crowd often not coming until two, or two-thirty or three o'clock, and in this way it shows an inclination in coming to be amused for a short time, rather than for any education or to see the exhibits which were put there.

Another point is the question of the light horse. In certain districts, probably, you will not have the same conditions, but in most of the fairs that I have attended, the light horse exhibits are disappearing. You know that light horse breeding is a thing of the past, and this has been practically altogether due to the automobile taking the place of the horse in the towns, cities and country. Consequently a good many of our fairs where light horses were the main attraction in the past are hard up against it at the present time. It is true there are a few districts which hang on to the light horse, and they are not suffering to such a great extent. But the trouble, as I see it, is that the automobile has some close relations creeping in, so that the heavy horse is rather in a dangerous position at the present time. These close relatives of the automobile, the motor truck and the tractor, are beginning to affect the heavy draught horse. This was evidenced in a good many fairs this past year.

The next point I want to take up is linked up with this, and with the light horses classes, and it also touches on most of the other classes at the fair—that is the big chance. The automobile has changed the likes and dislikes of the young and the middle aged. If a man drives an automobile for some time he has no particular use for a horse. It is true he will work with him on the farm, and he will drive him on the road when he has to, but when it comes to feeding and caring for that animal, they certainly do not want to do it, and it is for that reason probably more than anything else that a great many of our Fairs have

The Speedway at Fort William, and Exhibition Buildings in the Back-ground.

gone back considerably in that direction during the past few years. It is far easier to get into an automobile after dinner and go to the fair and get back, if you have chores to do, in time to do them in the evening, than to hitch up your horse and drive to the fair and care for it all day and take part in the programme and be an exhibitor. And that to my mind is one big influence that the automobile has on our fairs and exhibitions at the present time.

There is another reason. Too many of our fair boards have been trying to finance and run them on old prize lists, and if they want to overcome that, considerable increase will have to be made in the prize-money, in order that they may offer sufficient to pay the men for time at least and a part of their trouble in going to what they feel, is extra bother at the present time.

I want to mention one other thing, and that is the use that the automobile and the motor truck can be put to and is being put to. We found at our home fair that we can get exhibits of sheep and hogs from a great deal further away than we ever did, also some poultry and farm products, so by having your fair board put on an attractive prize list there is no doubt but that the automobile and motor truck can be turned into elements to bring in exhibits from greater distances, and in this way help the fair to a certain extent, off-setting some of the ways in which the fair is hurt.

To my mind, with automobiles and the travelling facilities we have at the present time, we could do more effective work with fewer fairs. And while I do not say that often the little fair is the best in the district, it would be an advantage to unite some of our fairs and make one really good one in a district to try and get away from every township having its own little fair.

There is no question about it, wider advertising would overcome some of our difficulties in securing attendance. If we have something which will appeal to the public, a little extra advertising will reach people at a distance.

I believe we could bring back some of the old conditions of a longer day fair by putting on a few attractive sports and a full day's programme in order to try and get the people for a little longer. To my mind this going to a fair for a couple of hours shows that, the people are not taking the vital interest in it which they should. I have talked with men in regard to the horse exhibits, and some of them have pointed out to me that this is a question which could be taken up by the Breeders' Associations, to try to popularize the horse, as Prof. Wade has told us, which would probably influence exhibitors and the general public more than even increased prize money. With fewer fairs more money could also be raised for the paying of prizes. However, this probably will right itself in the near future, as I have no doubt conditions are going to go back to fairly normal, and we are likely to get away from the high price of everything the last few years.

In summing up, I would like to throw out one idea, and that is that while the automobile has been and can be made use of in bringing out large numbers, in keeping up attendance at our fairs, something must be done in order to keep up the interest and also the number of men who will come out and show their stock rather than come as sight-seers.

THE PROBLEMS OF AGRICULTURAL SOCIETIES AND THE UPBUILDING OF A FAIR.

W. S. West, Woodstock.

My reason for consenting to say anything to the delegates assembled at this twenty-first annual convention of the Ontario Association of Fairs and Exhibitions, is simply that I have all my life from a small boy to the present time, been more or less connected with Agricultural Fairs, and for the past ten years have been Secretary of the Woodstock Agricultural Society, which had assets in 1910 worth $3,000 and to-day has grounds and buildings valued at $20,000. So you see, I have had considerable opportunity of seeing some of the problems of Agricultural Societies and the upbuilding of a Fair.

I plan in my few remarks to raise this question: "How to Upbuild a Fair," and in so doing try to bring out some of the problems with which Agricultural Societies have to deal . Let us start at the beginning—our annual meeting.

Elect officers who will take the same interest in their Fair as they do in their own business. I am afraid there are too often Directors willing to accept office, for the privilege and honor of having their names appear on the Board, but I am pleased to say that this is not the general rule, for we have many farmers who give unsparingly of their time at one of the most busy seasons of the year, for the promotion of the annual Fall Fair. Having elected officers, hold regular meetings of your Fair Board at least monthly. You may say this is not necessary, as there is no business to do in the early part of the year. I say the time to get together and plan for the Fall Fair is in the winter months when the farmers have ample time to attend meetings. Again, between meetings let each director think of some things that to his mind would be beneficial to his Fair, and bring the same up at the next meeting. If each of the directors would do this, what a grand discussion there would be at the meetings and what a benefit would be derived therefrom.

Some Questions that might be Discussed and Plans Made at the Monthly Meetings.

Preparation of Grounds and Buildings: Your buildings may be poor: and I want to say I have a lot of sympathy with a Society which has poor buildings and poor grounds; but if you grapple with the situation and every man on your board takes an interest and does his bit, all obstacles can be overcome. I will refer to the experience of the Woodstock Society on this particular part of the upbuilding of a fair.

Previous to 1910 our Society had very poor grounds and accommodation. Our whole outfit was not worth $3000. Something had to be done. In the winter of 1913, we went thoroughly into the matter, purchased a farm of 167 acres on the outskirts of Woodstock for $16,500. You say, how did you finance the proposition? Just by the Board of Directors taking an interest in the matter to such an extent that they all signed a note for $16,500 and we discounted same and purchased the farm and paid cash. Then we divided the front of the farm up into lots and sold them for some $12,000, this money being paid into the bank to pay off the note. We then sold the balance of the farm, keeping thirty acres for our fair grounds, and since that time we have erected the following buildings, costing as follows:—

Main Building	$ 5,100.00
Grand Stand	3,000.00
Horse Stables	1,950.00
Cattle Stables	1,750.00
Sheep Pens	500.00
Poultry House	1,200.00
Office, etc.	700.00
Judges' Stand	200.00
Land	6,000.00
	$20,300.00

We have now one of the finest grounds and Fair buildings in the Province of Ontario, thanks to the excellent work that has been done by the Board of Directors during the past few years, together with a close co-operation between the rural and urban municipalities in our district. I merely mention these

facts to show what can be done even with a Society which is in very poor circumstances.

Prize List and Programmes—Having taken up the question of *Directors, Grounds* and *Buildings,* we come next to one of the most important questions in connection with the upbuilding of an Agricultural Fair, and that is the preparation of the prize-lists and the programme for the annual Fall Fair. This is where the most difficult problems of running a successful Agricultural Fair are met, and I am afraid these most difficult problems are passed over by a lot of Fair Boards without giving them the consideration which they should have and some of our Directors are prone to be a little selfish; thinking only of that particular part of the Fair that interests themselves such as a cattle man is most interested in cattle, and a horse man in horses, and so on. This should not be, and every Director should be as anxious and willing to have all parts of the prize list looked after in the same manner as that part he is personally interested in, for example, the exhibits in the main building are just as important to the success of a good fair as are the horses and cattle, and *vice versa,* and in the revision of the prize lists every part of the list should be gone into and made better than the previous year. There must be *co-operation* of all those interested in the various departments to make the whole a grand success.

While we are looking after the prize list and the various departments of the Fair, we must not lose sight of the amusement part of the exhibition. There has been criticism of this particular part of Fairs before, and rightly so because certain privileges along this line have been abused in the past; but we always have people come to our fairs to be amused, and we must find ways to amuse them. We want them to come to our Fairs, and we want their money to help pay our prize money and other expenses; so I say, we must have some good clean amusements which do not cost too much money.

I have stated before that we must have co-operation on all sides and in every department of the Fair, for example: In the Poultry Department; nearly every District where a fair is held, has its Poultry Association. It is up to the Agricultural Societies to get in touch with this Association and work with them. To show you what this meant to our show; in 1910 we had about 300 entries and paid something over $100 in prize money, in 1920 we had nearly 600 entries and paid $359 in prize money. This increase was caused by co-operation with the Poultry Association. This same thing applies to nearly every part of the fair. For instance: We have the different Horse Breeders' Associations; the Cattle Breeders' Associations, Horticultural Societies, etc. An Agricultural Fair should work in conjunction with all of these.

And most important of all is co-operation with the younger generation, the boys and girls. In order to make a successful fair, you must get hold of the people in your locality and make them feel that they have a home duty to perform to their local show. I am proud to say that our Agricultural Associations have been advancing along this line, in the Province of Ontario. We want to keep the young men and women and also the school children interested. I believe that as agriculturists we should not stand idle, but co-operate with our school system. Get the children started along the lines of competing with articles of merit. It may be work of hand, or production of fruit or the raising of animals. Get them interested. That is what will keep the boys and girls on the farm. Allow me to again refer to our experience in connection with co-operation with the school

system of Oxford County. We have in all about ten School Fairs in our county which include every school in the County. These Fairs are all held during the two weeks previous to our Agricultural Fair. These Fairs are looked after by our District Representative, Mr. G. R. Green. For the past three years a Champion School Fair has been held in conjunction with the Woodstock Agricultural Society, on the last day of Woodstock Fair.

Winners of 1st, 2nd, and 3rd prizes, at the regular School Fairs throughout the County are eligible to compete in the various classes. Those eligible, as well as the teachers, are presented with complimentary tickets by the Agricultural Society, good for the one day only.

The advertising in connection with this part of our fair appears on the last page of the regular School Fair folders, and goes into practically every home throughout the County, so you see the advantage derived from an advertising standpoint.

On the Farm Where the Crop Grows Tall.

One of the chief features is the Stock Judging Competition. Those winning first and second place at each School Fair are eligible to compete. This year fifteen teams took part in the competition. The school boys were coached during the summer by young men who had taken one of the Winter Short Courses in the County. The boy who coached the winning team was given a free trip to the Chicago International Stock Show, by the Rural Service Department of the Merchants Bank of Canada, and the boy who coached the 2nd, and 3rd prize teams, were given the same trip by the Harris Abattoir Co., of Toronto.

The sum of $221.80 was paid out in prize money this year for the regular classes, besides 2,500 complimentary tickets and other special prizes.

You say, "How does this pay?" I say if your boy or girl has a complimentary ticket to your fair and is showing his or her own work, you will not have any peace of mind until you consent to come to the Fall Fair, so you see by getting the children interested, we get the father and mother; and, what is most important of all, once the children are interested in Agricultural Societies and exhibiting, they will continue to do so, and in a short space of time these same boys and girls will have grown to men and women and will be a mighty factor in the success of not only our Fall Fairs but everything pertaining to Agriculture all over our fair Dominion.

To show you the result of our work with the Champion School Fairs, I wish to quote the following figures:—

No. of entries in 1918	162
No. of entries in 1919	335
No. of entries in 1920	580

Record of the standing of the Oxford County Stock Judging Teams at The Winter Fair, Guelph, in the Inter-County Live Stock Judging Competition.

1915	1st.
1916	17th.
1917	3rd.
1918	2nd.
1919	1st.
(also Provincial Champions)	
1920	2nd.

Financing Your Fair.

We must have finances to carry on. Do not depend too much on your gate-receipts to finance your fair. Sell all the members' tickets you can before the fair, because if you should have wet weather and have sold two or three hundred members' tickets, it means a great help. Pull all the strings you can to increase your receipts. We are excellently looked after by the Government, thanks to the untiring efforts of our Superintendent, Mr. Lockie Wilson. We should not depend too much on the Government Grant. Look after the Municipal Grants both County Council, City or Town Council and Township Councils, and when you have got all you can from these sources try the private subscriptions, and while soliciting private subscriptions, ask for cash, not goods, then you can use this money for prize money for Agricultural purposes, and by so doing get a Government Grant on same. When you have received all the money you can before the date of the Fair, see that you receive all the receipts you are entitled to from the Fair, for instance: for rent of space on the grounds and main buildings, etc. If all these different sources for getting financial assistance from are looked after, it will make a very material difference in assisting in the upbuilding of a fair.

In conclusion, allow me to leave with you a few *Don'ts* which I consider very important to the upbuilding of an Agricultural Fair.

If a Director on horses, don't ride into the Judging Ring with an exhibitor.

If interested in any particular exhibitor, don't draw the attention of the Judge to any exhibit; for example, saying "That is a dandy horse."

Don't be discourteous to an exhibitor even though he or she gives you cause; we need that exhibitor another year.

Gentlemen Directors, don't forget the Ladies' Department; they need assistance at Fair time.

Have the whole organization complete before the day of the show. As Directors, if you accept any particular duty at the fair don't fail in that duty. If you cannot attend to it, don't forget to let your Secretary or Manager know.

Don't forget to hold a banquet in the early part of the year with one or two outside speakers, who will be able to discuss questions of interest to farmers.

Don't have a one man show. See to it that every Director takes some part.

If you have any complaints to make or any fault to find, don't keep it to yourselves; but bring it up at the Board meetings and have it settled there.

R. E. COWAN: The subject which Mr. West has introduced has been very well discussed in previous papers.

The problems of the Agricultural Society, of course, vary with the location thereof. It is the duty of all Boards of Directors to secure a large exhibit. Make the exhibit your chief attraction at the fair. If you have not the exhibit, the enthusiasm of the people who attend and the interest which they display will be diminished. We pursue a system of co-operation between the Agricultural Societies of South Waterloo. In approaching our County Council for a grant we all go there together, and for this last number of years we have received $1,000, to be divided between the four Societies. Five years ago we got $25 a piece and we asked them for $1,100 the next year. The first year they increased it to $150, then to $200, and last year they gave us the full amount of $250 each. It is of importance to have that grant equally divided, as it is just as hard a job for the small society to finance its exhibition as it is for the large one.

As regards attractions: One of the chief attraction which any Society can have is a first class band. Everybody is in sympathy, everybody delights in hearing first class music, and I have no doubt that there are a large number here who will bear me out in the statement that a first class band is one of the best attractions.

In regard to midway attractions: We do not spend any money for free attractions. We are situated just a little peculiarly. Last year the City Council of Galt passed a by-law which made it obligatory for all carnivals and midways coming to the city or within a certain district where our show grounds are situated, to obtain a permit from the Chief of Police before such midway or carnival would be allowed to operate. We come under that by-law. I went to the Chief of Police, showed him the Agricultural Societies Act, showed him the clauses under which midways and shows were allowed to operate under the Agriculture Act. I left a copy of the Act with the Chief, and we obtained a permit for a midway or anything on the grounds which came within the provisions of the Agricultural Societies' Act. He also stipulated that we were to engage a policeman. We engaged the sergeant of the force and paid him. The Chief issued the permit and we had no trouble with the midway.

Now as to speeding in the ring: There are two kinds of speeding, there is speeding with good horses and horses that probably were good at one time. I always maintained that in order to properly judge a road horse it is part of the necessary purpose for which they are bred that they show a bit of speed.

When you make up your prize lists, have your speeding attractions. It is very necessary that you stipulate, that you give a certain per cent. for speed and

so much for soundness. You thus get a better quality of horse than you would otherwise obtain where speed was the entire object.

The biggest asset which any Agricultural Society has or could have, is co-operation amongst the Board of Directors and between the Board of Directors and the members of the Agricultural Society. Inspire a spirit of local loyalty to your fair, make every person feel that it is theirs. One man can not run a show, nor can the Board of Directors alone. Make every person feel that they are vitally interested in the success of the exhibition.

REPORTS OF DISTRICT DIRECTORS.

W. E. Smallfield, Renfrew, Director.

I had hoped to attend the Fairs of a goodly number of the societies in this district, to make personal observation of their condition, but illness prevented. Consequently, I opened up communication with the Secretaries after the Fairs were over.

Several of the Societies made considerable expenditures on grounds and buildings during the year. Kingston improved its grounds and added to its buildings to the extent of $5,000. Renfrew built a fine entrance gate, re-arranged several of the horse stables, and otherwise improved its grounds and equipment at an outlay of over $3,000. Cobden enlarged its grounds and built a new track and additional sheds. Storrington spent $500 in improving its hall (both interior and exterior), and improved its grounds. Perth added two cattle sheds and a band-stand and levelled and sodded its grounds.

Most of the Fairs report good attendance, but one or two suffered severely from rain, Kingston and Cobden particularly; and Lansdowne and Beachburg were unfortunate in that rain during the early days prevented the bringing in of many exhibits. At Kingston the loss in gate receipts was partly offset through the business acumen of the manager, Mr. R. J. Bushell, who had arranged for rain insurance through a private company, in addition to that coming to his Fair from the Fairs' Association grant from the Government to meet losses from rain.

On the whole, both the Fairs and Field Crop Competitions of the district were satisfactory.

The small rural Fairs, however, are facing a hard problem. There two main difficulties, as detailed to me by the Secretaries, are that the general use of the automobile is turning many from being exhibitors into being spectators only, and also that the number of automobiles on the roads makes it difficult to bring cattle out for exhibit. The shortage of help further militated against a full supply of exhibits being brought out. Some of these smaller fairs also find attendance falling away because of the lack of amusement attractions. I shall take opportunity of laying before the Annual Convention some proposals for remedying or meeting these conditions.

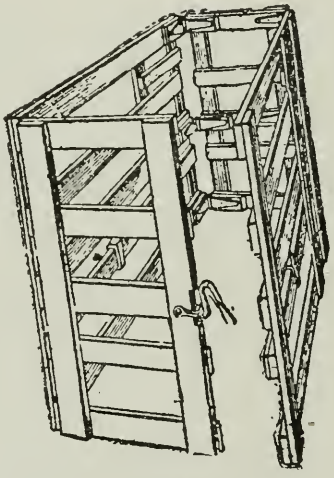
Backing up the communications of Treasurer Peart, I sent out special letters to all Fairs in District No. 2, not yet affiliated with the Ontario Fairs' Association, urging them to join and to send delegates to the Convention, and trust that results may ensue from this effort.

No. 6. G. C. Johnston, Ancaster, Director.

In making my annual report to this Association for District No. 6, I desire to say that I realize the futility of visiting a fair or a directorate while a show is in operation, owing to the fact that all the Directors are busy at the time in the management of their various departments. I visited as many of the fairs in my district as could be conveniently reached, as my district is a very large one and many fairs fall on the same day, and I hope that the Directors will kindly help along the good work of a two county circuit.

Many of the fairs are not attaining the standard of efficiency that they might, inasmuch as they fail to be progressive in the largest field of usefulness. Many of them do not have Standing Field Crop Competitions, which is to my mind very much to be regretted as they have an upward trend to standardize the various crops of produce in our country.

In the prize list, many of them are far too small and I would urge every society to specialize in the strongest feature of their district.



Type of Collapsible Crate Suitable for Live Stock Exhibitions.

The school fairs are doing good work in educating the youth of the district in the making and preparing of exhibits, and their influence on the Agricultural Society will be a gradually accumulative one. I believe in some instances it would be advisable to hold the rural school fair and the fall fair on the same day.

Many fairs do not employ departmental Judges and I would urge that an Inspector visit all the fairs, and report to the department all such fairs that are weak and arrange to amalgamate where it can be conveniently arranged. Many societies in our Districts are in arrears to the Ontario Fairs and Exhibitions Association, and I would urge upon them the necessity of affiliating with that body.

I wish to thank the delegates to this Convention, for their kindness and courtesy extended toward me during my term of office.

No. 7. F. G. Seaton, Lakeside, Director.

It was my privilege to represent the Fairs in this District in 1920. I did not visit any of the Fairs, as I am of the opinion that it is impossible to get a proper

idea of the working when everyone is busy. But on making inquiry, I find that in 1920 there was a falling off in entries, and every Department of all the Fairs was not represented as in former years.

Horses made a very poor showing, the cause of which was the scarcity of feed in 1919, and they were not properly fitted for exhibition purposes.

The automobile is another cause of a shortage of entries. The family can all go and the boys do not care to take their favorite colt or cattle or sheep when they can go so easily and in comfort.

The filling of silos is another factor. Every township has its fair about the time of filling and where eight or nine outfits are running it stops attendance and entries.

Fakers were in evidence, and it is pretty hard for the Directors to handle them. I would suggest that three or four Fairs get together and employ constables with proper authority to handle them, and I am sure that it would be the best remedy, without making it disagreeable for the Directors in charge.

The Districts are too large for one representative to visit. I would suggest that each County have a meeting once a year in the County Town, of at least a Secretary and President of each Society to discuss and plan better ways of handling Fairs. The District Representative could arrange for such meetings.

No. 8. R. W. McKellar, Glencoe, Director.

In making my annual report for District No. 8, comprising the counties of Perth, Huron, Middlesex, and Elgin, I desire to say that I realize the futility of visiting a Fair, or a Fair directorate, while a show is in operation, owing to the fact that all the Directors are busy at this time in the management of their various departments.

For those reasons, I have not visited many of the Fairs in my District, only those in the vicinity of my home and those that could be conveniently reached by motor. For this reason I am not asking this Association for expenses of any kind.

The Fairs which I visited I found very prosperous, although the exhibits and attendance were not so large as in former years; particularly the early Fairs, owing no doubt to the busy season and scarcity of help. The Fairs, as a rule, were well conducted and successful, but the midway artist, thimble-rigger and faker are putting in an appearance in many places.

In making a survey of the District I find that the Fairs are not attaining the standard of efficiency that they might, inasmuch as they fail to be progressive in the largest fields of usefulness. Many of the Societies do not hold Standing Field Crop Competitions, which to my mind is very much to be regretted, for the reason that those competitions tend to standardize the various crops in competition, and make it easier to secure good clean seed at reasonable prices.

Another feature that is finding its way to the front at our Fairs, is the judging of livestock by farmers' sons under twenty-one years of age. It is an important feature and should be encouraged.

The School Fairs, when held in conjunction with the Fall Fairs, are doing good work in educating the youth of the District in the making and preparing of exhibits; and I would urge you all to give every encouragement to the children in this good work, as it is most desirable that our children should be encouraged

in their garden work. The boys and girls of to-day will be the men and women of to-morrow. Very soon they will take our places, let us fit them for the work. I would like to see every Society in the Province send delegates to the Annual Convention of Fairs and Exhibitions. If they cannot send delegates, they should at least send the affiliation fee, as there is not a Society that is not benefited in some way by this Association.

In conclusion I wish to thank the officers and directors for their kindness and hospitality extended to me during my term of office, and hope that the year will be a banner one for the Fairs of the Province.

No. 10. W. Calder, Durham, Director.

This District is composed of the counties of Grey and Bruce, and comprises twenty societies in Grey, and fifteen in Bruce. Crops of grain, roots and fruit were fairly good with the result that exhibits in these lines in the majority of cases were well up to the average at the Fairs which I visited. There seems to be a falling off in stock exhibits owing largely to the scarcity of help to prepare animals for the Fair. In many instances there must be larger premiums offered to induce the breeders to bring out their stock. Exhibits in ladies' work showed a decided improvement in a number of Fairs. Field Crop Competitions are being held by quite a large number of the Societies and, as a result, there is a decided improvement in seed.

School Fairs are being introduced in a great many schools: a very active interest is being taken by the children in these Fairs and these will no doubt provide many exhibitors. A great deal of credit is due the Agricultural Representative, at Markdale, in the County of Grey for introducing many new features at the School Fairs and in other directions which are bearing good results. The attendance at the majority of the fairs which I visited was well up to the average, but, unfortunately, a very heavy rain and snow storm swept over both counties during the last days of September, and first of October, and, in several instances, there was not any fair held, and in other cases the fair was postponed. I have no doubt the money required to make good the losses in gate receipts in this district will be larger than for many years past.

No. 11. T. Rowland Hill, Hillside, Director.

So far as I am able to judge from those I attended and information available, the fairs of 1920 in this district were a little below the average of former years. Especially our usually strong root and vegetable exhibits suffered a set-back at most local fairs, though our grain and root exhibitors at the Canadian National and Guelph Winter Fairs had their usual success.

The gradual improvement in the finish and quality of the livestock is a pleasure to note, though much can still be done in this regard.

Rural School Fairs and the efforts of our District Representative are helping and will continue to help our fairs.

No. 12. Eastern Division, E. F. Stephenson. New Liskeard, Director.

From actual knowledge and from information received by letter from places I could not visit, I am able to report that the Fall Fairs of 1920 were the most successful yet held in this part of Northern Ontario. The farm and garden

crops were all good and well-saved, and the harvest was earlier than usual thus enabling the farmers to have grain threshed in time for the fairs.

Two years ago the Agricultural Society of North Bay was re-organized and the second fair since re-organization was perhaps the best ever held in this large and flourishing town.

One of the most prosperous Agricultural Societies in the eastern part of Northern Ontario is that of New Liskeard. Last year this Society paid out in prizes over $800 and had over 1,800 entries.

Many of the societies have been holding school children's fairs for several years. New Liskeard has been doing this for years, but in 1920 branched out and took in the school children of the near-by but larger towns of Haileybury and Cobalt. The Society conveyed the exhibits and exhibitors to and from the fair-ground free of charge, and in addition to offering three cash prizes for each kind of exhibit, a valuable silver trophy was donated the school winning the largest percentage of prizes. A $15 cash prize was also donated to the school winning the prize for the best drill. So successful was the experiment that it has been decided to have a similar union school children's fair this year.

The leading features in our Northern Ontario Fairs have been the horticultural rather than the agricultural. Thus it would appear that the townspeople are more interested in the success of the fairs than the farmers, but the fact is that our Northern farmers have not been able to get farm help and have not had the time to fit up their live stock, etc., for fairs. I am hoping that the time is near at hand when our farmers will see it to their advantage to bring out their live stock to the annual fair.

No. 12. Western Division, Jas. Tonkin, Fort William, Director.

As Director of this District, I find it impossible to attend all the fairs. Our first fair was held at Kenora, which is three hundred miles from Fort William. This I was unable to attend. I wrote the Association regarding their Fair, and they replied that it was the most successful one they have ever had. Their gate receipts were increased 50%, their entries over 100%, and they paid out over 100% more money in prizes than in any previous year.

Rainy River Valley Agricultural Association held their Fair on September 15-16, and they claim it was a very great success both in attendance and in entries. They have spent $400 on their buildings lately to improve the accommodation for next year.

Atwood also had a very successful fair this year. It was on the same date as the West Algoma Fair so I could not attend, it being impossible for me to leave our own fair.

I was present at White Fish Valley Fair at Hymers, thirty miles distant from Fort William. They had a very wet day for the fair and this prevented many entries of grains and vegetables from being exhibited and also many horses and cattle. The poor weather decreased their gate receipts somewhat.

The West Algoma Association held their fair on September 14-15-16. We had considerable success and several outside attractions. We find it very expensive to get these in, as we are so far away from Winnipeg or Toronto. Our Vegetable and Flower exhibits were very good, but our Grain exhibit was not up to its usual standard. The Rotarians, the Kiwanians and the Twin City

Motor League contributed greatly to the fair's success, as they all turned out to help the Fair Board. We had a splendid exhibit from the Dominion Government, which was very instructive to the district farmers. This exhibit was greatly appreciated. We also received a mineral exhibit from the Provincial Government through our Minister, the Hon. Harry Mills. The Industrial Farm and its Plant Breeding Station sent in exhibits which were enjoyed by the visitors at the fair.

We were very pleased to have the Superintendent of the Agricultural Societies, of Ontario, J. Lockie Wilson, spend a day with us at the fair. We tried very hard to persuade him to stay over for a week and see what we are doing in this District, but he was unable to do so. He was certainly surprised to see some of the vegetables and potatoes that are grown here.

I visited Oliver Fair which also proved successful. There were nearly 1,100 entries; a good show of horses and of dairy cattle, such as Holsteins, Ayrshires and Jerseys, besides some good beef cattle. Their exhibits of pigs, sheep and dairy products were splendid. The ladies' work, which was exhibited in the new Hall, was better than usual. The School Fair was held in connection with the Oliver Fair and the children were given free admision. From a financial aspect, this fair was very satisfactory, the gate receipts alone amounting to $1,000. The new directors have decided to improve the grounds, buildings and cattle sheds for next year.

After singing the National Anthem the 1921 Convention adjourned.

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES.

Societies.	1920	1921
Algoma:		
Bruce Mines	198 00	208 00
Central Algoma	734 00	673 00
Iron Bridge	83 00	79 00
Johnston & Aberdeen	106 00	89 00
North Shore	124 00	116 00
St. Joseph Island	180 00	173 00
Thessalon	233 00	218 00
Brant:		
Onandaga	160 00	170 00
Paris	416 00	406 00
South Brant	414 00	328 00
Bruce:		
Arran and Tara	322 00	339 00
Carrick	257 00	277 00
Chesley	222 00	179 00
Eastnor	73 00	77 00
Hepworth	166 00	152 00
Huron Township	197 00	185 00
Kincardine	156 00	139 00
Lucknow	240 00	226 00
N. Bruce & Saugeen	206 00	198 00
Paisley	225 00	209 00
Pinkerton	97 00	97 00
Teeswater	279 00	301 00
Tiverton	140 00	142 00
Underwood	137 00	138 00
Wiarton	199 00	207 00
Carleton:		
Carleton County	349 00	330 00
Carp	341 00	333 00
Fitzroy	207 00	200 00
Metcalfe	288 00	295 00
Dufferin:		
Dufferin	349 00	367 00
Dufferin Central	331 00	322 00
East Luther	286 00	263 00
Dundas:		
Dundas	61 00	65 00
Mountain	212 00	207 00
Winchester	217 00	212 00
Durham:		
Cartwright	144 00	142 00
Clarke Township	323 00	316 00
Millbrook	312 00	246 00
Port Hope	370 00	351 00
West Durham	459 00	444 00
Elgin:		
Aldborough	224 00	209 00
Aylmer & E. Elgin	206 00	214 00
Shedden	94 00	92 00
South Dorchester	192 00	165 00
Straffordville	102 00	91 00
West Elgin	342 00	360 00
Yarmouth & Belmont		286 00
Essex:		
Amherstburg, Anderdon & Malden	233 00	180 00
Colchester South	206 00	204 00
Comber	139 00	130 00
Essex County	549 00	523 00
Mersea, Leamington & S. Gosfield	450 00	456 00
Frontenac:		
Kennebec	46 00	45 00
Kingston Industrial	734 00	800 00
Parham	99 00	96 00
Storrington	78 00	82 00
Wolfe Island	100 00	91 00
Glengarry:		
Glengarry	204 00	203 00
Kenyon	146 00	169 00
St. Lawrence Valley	325 00	343 00
Grenville:		
Kemptville		124 00
Merrickville	166 00	137 00
Spencerville	153 00	142 00
Grey:		
Ayton	110 00	113 00
Collingwood Township	163 00	204 00
Desboro	215 00	197 00
East Grey	129 00	116 00
Egremont	160 00	159 00
Hanover, Bentinck & Brant	173 00	180 00
Holland	207 00	215 00
Keppel	110 00	111 00
Kilsyth	243 00	242 00
Markdale	254 00	260 00
Meaford & St. Vincent	263 00	287 00
Normanby	84 00	73 00
Osprey	138 00	153 00
Owen Sound	433 00	468 00
Priceville	101 00	91 00
Proton	240 00	208 00
Rocklyn	209 00	168 00
South Grey	157 00	141 00
Sydenham	136 00	138 00
Walter's Falls	220 00	253 00
Haldimand:		
Caledonia	531 00	534 00
Canboro	62 00	54 00
Dunnville	143 00	129 00
Haldimand	213 00	197 00
Southern Branch	116 00	107 00
Walpole	193 00	177 00
Haliburton:		
Glamorgan	57 00	52 00
Haliburton	205 00	200 00
Minden	223 00	235 00
Halton:		
Acton	260 00	270 00
Esquesing	250 00	248 00
Halton	436 00	426 00
Nelson & Burlington	279 00	271 00
Trafalgar	800 00	800 00
Hastings:		
Bancroft	137 00	133 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES. (CONT'D.)

HASTINGS—*Con.*		
Belleville	354 00	353 00
Frankford	253 00	233 00
Madoc	283 00	278 00
Marmora	199 00	228 00
Maynooth	63 00	65 00
Shannonville	134 00	117 00
Stirling	199 00	200 00
Tweed	212 00	214 00
Wollaston	160 00	191 00
HURON:		
Bayfield	121 00	112 00
Blyth	128 00	146 00
Dungannon	133 00	121 00
East Huron	232 00	226 00
Exeter	234 00	249 00
Goderich Industrial	246 00	239 00
Howick	188 00	177 00
Seaforth	189 00	176 00
South Huron (Spring Fair only)		
Turnberry	187 00	188 00
Zurich	148 00	145 00
KENORA:		
Dryden	249 00	263 00
Kenora	450 00	567 00
KENT:		
Camden	133 00	125 00
East Kent	221 00	212 00
Harwich	220 00	220 00
Howard	373 00	387 00
Orford	262 00	256 90
Raleigh & Tilbury	157 00	134 00
Romney & Wheatley	132 00	117 00
Wallaceburg	131 00	124 00
West Kent	322 00	324 00
LAMBTON:		
Bosanquet	164 00	152 00
Brooke & Alvinston	337 00	369 00
East Lambton	281 00	231 00
Florence	188 00	191 00
Forest	264 00	254 00
Moore	286 00	280 00
Petrolia & Enniskillen	383 00	357 00
Plympton & Wyoming	208 00	209 00
Sombra	121 00	118 00
West Lambton	429 00	413 00
LANARK:		
Dalhousie	104 00	98 00
Lanark Township	125 00	138 00
Lanark Village and Bathurst	172 00	161 00
Maberly	81 00	
North Lanark	449 00	465 00
Pakenham	183 00	178 00
South Lanark	347 00	358 00
LEEDS:		
Brockville	453 00	445 00
Delta	166 00	187 00
Frankville	166 00	182 00
Lansdowne	211 00	204 00
Lombardy	144 00	124 00
LENNOX AND ADDINGTON:		
Addington	126 00	189 00
Amherst Island	140 00	140 00
Ernestown	155 00	173 00
Lennox	300 00	300 00
LINCOLN:		
Abingdon	70 00	68 00
Clinton	264 00	258 00
Monck	81 00	91 00
Niagara Town & Tp	96 00	99 00
Peninsula Central	102 00	115 00
MANITOULIN ISLAND:		
Billings	250 00	234 00
Gore Bay	377 00	389 00
Howland	184 00	214 00
Manitowaning	253 00	257 00
Providence Bay	243 00	236 00
MIDDLESEX:		
Caradoc	149 00	150 00
Delaware	201 00	187 00
Dorchester	226 00	194 00
East Middlesex	100 00	100 00
London Township	140 00	151 00
McGillivray	67 00	62 00
Melbourne	269 00	273 00
Mosa & Ekfrid	216 00	222 00
North Middlesex	133 00	117 00
Parkhill	153 00	143 00
Strathroy	545 00	502 00
Thorndale	158 00	177 00
Westminster	144 00	153 00
MUSKOKA:		
Baysville	159 00	171 00
Gravenhurst & Muskoka	325 00	311 00
Medora & Wood	320 00	315 00
Morrison	99 00	105 00
North Muskoka	386 00	366 00
South Muskoka	800 00	800 00
Stephenson & Watt	347 00	380 00
Stisted	171 00	161 00
NIPISSING		
Astorville	109 00	99 00
Bonfield	137 00	131 00
East Nipissing	283 00	279 00
North Bay	63 00	300 00
Sturgeon Falls	395 00	348 00
Verner	366 00	389 00
NORFOLK:		
Charlotteville	144 00	128 00
Courtland	126 00	111 00
Houghton	123 00	114 00
Norfolk County	644 00	626 00
North Walsingham	101 00	83 00
Townsend	98 00	84 00
Windham	110 00	118 00
NORTHUMBERLAND:		
Alnwick	152 00	148 00
Brighton	252 00	216 00
Cobourg Central	283 00	
Colborne	303 00	320 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES. (CONT'D.)

NORTHUMBERLAND—*Con.*		
Cramahe	160 00	
Percy Township	537 00	577 00
Seymour	289 00	314 00
Wooler	162 00	172 00
ONTARIO:		
Beaverton	232 00	241 00
Brock	188 00	170 00
Port Perry, Reach & Scugog	240 00	241 00
Ramona	40 00	41 00
Scott	128 00	125 00
South Ontario	610 00	581 00
Uxbridge	207 00	221 00
OXFORD:		
Drumbo	335 00	317 00
East Nissouri	142 00	127 00
Ingersoll N. & W. Oxford	181 00	173 00
North Norwich	216 00	212 00
South Norwich	144 00	145 00
Tavistock	281 00	265 00
Tillsonburg & Dereham	277 00	279 00
West Zorra & Embro	208 00	192 00
Woodstock	540 00	611 00
PARRY SOUND:		
Armour, Ryerson and Burk's Falls	536 00	488 00
Christie	291 00	292 00
Loring	224 00	210 00
Machar	204 00	205 00
Magnetawan	303 00	320 00
McKellar	462 00	459 00
McMurrich	282 00	279 00
Parry Sound	523 00	500 00
Perry	343 00	321 00
Powassan	361 00	361 00
Rosseau	393 00	375 00
Strong	327 00	337 00
Trout Creek	130 00	100 00
United Tps	264 00	274 00
PEEL:		
Albion & Bolton	280 00	274 00
Caledon	160 00	178 00
Cooksville	280 00	257 00
Peel	490 00	550 00
Toronto Gore (Spring Fair only)		
Toronto Tp	306 00	311 00
PERTH:		
Elma	131 00	131 00
Fullarton, Logan and Hibbert	334 00	314 00
Kirkton	223 00	228 00
Listowel	158 00	142 00
Mornington	222 00	203 00
South Perth	223 00	207 00
Stratford	455 00	435 00
PETERBOROUGH:		
East Peterborough	464 00	471 00
Galway	54 00	47 00
Lakefield	155 00	161 00
Otonabee	150 00	151 00
Peterborough Industrial	800 00	800 00
PRESCOTT:		
Alfred	151 00	152 00
South Plantagenet	131 00	134 00
Vankleek Hill	282 00	353 00
PRINCE EDWARD:		
Ameliasburg	200 00	176 00
Prince Edward	724 00	787 00
Sophiasburg	124 00	119 00
RAINY RIVER:		
Atwood	474 00	512 00
Rainy River Valley	582 00	655 00
RENFREW:		
Arnprior	335 00	342 00
Cobden	255 00	264 00
North Renfrew	413 00	395 00
Renfrew	699 00	775 00
RUSSELL:		
Casselman	37 00	63 00
Clarence	92 00	83 00
Russell	225 00	252 00
SIMCOE:		
Alliston	177 00	151 00
Barrie	476 00	508 00
Beeton	153 00	152 00
Bradford & W. Gwillimbury	204 00	210 00
Coldwater	169 00	187 00
Cookstown	202 00	194 00
East Simcoe	272 00	258 00
Flos Township	207 00	222 00
Nottawasaga & Great Northern	293 00	330 00
Oro	201 00	180 00
Tiny and Tay	227 00	294 00
STORMONT:		
Cornwall	346 00	390 00
Finch	77 00	71 00
Roxborough	266 00	273 00
Stormont	158 00	168 00
SUDBURY:		
Chelmsford	218 00	223 00
Martland & Cosby	114 00	113 00
Massey	273 00	275 00
Warren	273 00	308 00
TEMISKAMING:		
Charlton	259 00	264 00
Cochrane	195 00	215 00
Englehart	365 00	386 00
Matheson	98 00	
New Liskeard	460 00	465 00
Porquis Jct	70 00	54 00
THUNDER BAY:		
Oliver	369 00	387 00
Ware Tp	46 00	61 00
West Algoma	800 00	800 00
Whitefish Valley	202 00	191 00
VICTORIA:		
Eldon	122 00	112 00

COMPARATIVE STATEMENT OF GRANTS TO AGRICULTURAL SOCIETIES (CONT'D.)

VICTORIA.—*Con.*		
Fenelon	169 00	167 00
Mariposa	98 00	94 00
South Victoria	800 00	800 00
Verulam	271 00	343 00
WATERLOO:		
Elmira and Woolwich	176 00	179 00
South Waterloo	545 00	532 00
Wellesley and North Easthope	238 00	248 00
Wilmot	350 00	403 00
WELLAND:		
Bertie	129 00	112 00
Fenwick	315 00	291 00
Thorold Town & Tp	209 00	201 00
Welland	485 00	486 00
WELLINGTON:		
Arthur	259 00	249 00
Centre Wellington	359 00	335 00
Erin	284 00	279 00
Mount Forest	330 00	319 00
Palmerston	144 00	45 001
WELLINGTON.—*Con.*		
Peel & Drayton	178 00	181 00
Puslinch	167 00	153 00
Rockwood	254 00	279 00
West Wellington	164 00	180 00
WENTWORTH:		
Ancaster	250 00	248 00
Binbrook	149 00	182 00
Rockton	342 00	336 00
Waterdown	192 00	184 00
West Flamboro	153 00	141 00
YORK:		
Markham & East York	645 00	616 00
Newmarket	454 00	451 00
Queensville	120 00	72 00
Richmond Hill	262 00	263 00
Scarboro	342 00	325 00
Schomberg	217 00	264 00
Sutton	171 00	188 00
Weston, York & Etobicoke	276 00	313 00
Woodbridge	593 00	662 00
	$82,115 00	$82,079 00

SPECIAL GRANTS TO SOCIETIES IN THE DISTRICTS.

Societies.	1920	1921
ALGOMA:		
Bruce Mines	66 00	67 00
Central Algoma	100 00	100 00
Iron Bridge	28 00	26 00
Johnston & Aberdeen	35 00	2 00
North Shore	41 00	38 00
St. Joseph Island	60 00	56 00
Thessalon	78 00	70 00
FRONTENAC:		
Kennebec	30 00	30 00
Parham	65 00	61 00
HALIBURTON:		
Glamorgan	16 00	36 00
Haliburton	69 00	65 00
Minden	74 00	76 00
HASTINGS:		
Bancroft	91 00	86 00
Maynooth	42 00	42 00
Wollaston	100 00	100 00
KENORA:		
Dryden	86 00	85 00
Kenora	100 00	100 00
MANITOULIN:		
Billings	83 00	76 00
Gore Bay	100 00	100 00
Howland	61 00	69 00
Manitowaning	84 00	83 00
Providence Bay	81 00	76 00
MUSKOKA:		
Baysville	53 00	55 00
Gravenhurst & Muskoka	100 00	100 00
Medora and Wood	100 00	100 00
Morrison	33 00	34 00
North Muskoka	100 00	100 00
South Muskoka	100 00	100 00
Stephenson and Watt	100 00	100 00
Stisted	57 00	52 00
NIPISSING:		
Astorville	36 00	32 00
Bonfield	46 00	42 00
East Nipissing	94 00	90 00
North Bay	75 00	89 00
Sturgeon Falls	100 00	100 00
Verner	100 00	100 00
PARRY SOUND:		
Armour, Ryerson and Burk's Falls	100 00	100 00
Christie	97 00	94 00
Loring	75 00	68 00
Machar	68 00	66 00
Magnetawan	100 00	100 00
McKellar	100 00	100 00
McMurrich	94 00	90 00
Parry Sound	100 00	100 00
Perry	100 00	100 00
Powassan	100 00	100 00
Rosseau	100 00	100 00
Strong	100 00	100 00
Trout Creek		49 00
United Tps	88 00	88 00
PETERBOROUGH:		
Galway	36 00	31 00

SPECIAL GRANTS TO SOCIETIES IN THE DISTRICTS. (CONT'D.)

RAINY RIVER:		
Atwood	100 00	100 00
Rainy River Valley	100 00	100 00
SUDBURY		
Chelmsford	74 00	72 00
Martland and Cosby	38 00	37 00
Massey	90 00	89 00
Warren	90 00	99 00
TIMISKAMING:		
Charlton	86 00	85 00
TIMISKAMING.—*Con.*		
Cochrane	65 00	69 00
Englehart	100 00	100 00
Matheson	30 00	no return
New Liskeard	100 00	100 00
Porquis Jct	18 00	18 00
THUNDER BAY:		
Oliver	100 00	100 00
West Algoma	100 00	100 00
Whitefish Valley	67 00	62 00
	$5,000 00	$4,982 00

SPECIAL GRANTS.

	1920	1921
INDIAN SOCIETIES:		
Garden River	50 00	50 00
Sarnia Reserve	50 00	50 00
Six Nations	100 00	100 00
United Indian	100 00	100 00
	$300 00	$300 00

GRANTS TO THE CANADIAN NATIONAL, CENTRAL CANADA AND WESTERN FAIR.

	1920	1921
Canadian National	$2,500 00	$2,500 00
Central Canada	1,057 00	1,102 00
Western Fair	1,443 00	1,398 00
	$5,000 00	$5,000 00

GRANTS TO SPRING FAIRS—1921

Stallion Shows, 1921, $466.00.

Millbrook	50 00
Seaforth	50 00
Wilmot	50 00
Wellesley and N. Easthope	46 00
S. Perth	20 00
Erin	50 00
Forest	50 00
E. Luther	50 00
Collingwood Tp	50 00
S. Lanark	50 00
	$466 00

Stallion and Bull Shows, 1921, $200.00.

S. Huron	50 00
Arthur	50 00
Toronto Gore	50 00
Peel Co	50 00
	$200 00

Seed Fairs, 1921, $189 00.

Verulam	22 00
Richmond Hill	23 00
S. Huron	13 00
Puslinch	15 00
Rockwood	25 00
C. Wellington	22 00
Wilmot	19 00
S. Waterloo	25 00
New Liskeard	25 00
	$189 00

GRANTS TO SOCIETIES OWNING PURE-BRED STOCK—1921

Colchester, North	$220 00
Cottam	310 00
Drummond	100 00
Dummer and Douro	250 00
Emily	165 00
Lakehurst	150 00
Oldcastle	440 00
Osgoode	215 00
S. Woodslee	800 00
Verulam	80 00
	$2,730 00

LEGISLATIVE GRANTS TO AGRICULTURAL SOCIETIES WHICH HELD FIELD CROP COMPETITIONS IN 1920.

Algoma:	
Bruce Mines	100 00
North Shore	100 00
St. Joseph Island	100 00
Thessalon	100 00
Brant:	
Onondaga	100 00
Paris	100 00
Bruce:	
Arran and Tara	50 00
Carrick	50 00
Chesley	50 00
Eastnor	100 00
Hepworth	100 00
Huron Tp	100 00
Lucknow	100 00
North Bruce and Saugeen	100 00
Pinkerton	50 00
Teeswater	100 00
Wiarton	100 00
Carleton:	
Carp	100 00
Fitzroy	100 00
Metcalfe	100 00
Dufferin:	
Dufferin	100 00
Dufferin Central	50 00
East Luther	100 00
Dundas:	
Mountain	100 00
Durham:	
Cartwright	100 00
Clarke Tp	100 00
Millbrook	100 00
West Durham	50 00
Elgin:	
Aldboro	100 00
Straffordville	100 00
West Elgin	100 00
Essex:	
Amherstburg, Anderdon and Malden	100 00
Comber	50 00
Frontenac:	
Kingston Industrial	50 00
Wolfe Island	50 00
Glengarry:	
Kenyon	50 00
St. Lawrence Valley	100 00
Grey:	
East Grey	50 00
Holland	100 00
Keppel	100 00
Kilsyth	100 00
Markdale	50 00
Meaford and St. Vincent	50 00
Osprey	50 00
Proton	100 00
Rocklyn	100 00
South Grey	50 00
Walter's Falls	100 00
Haldimand:	
Haldimand	50 00
Southern Branch	50 00
Halton:	
Halton	100 00
Nelson and Burlington	100 00
Hastings:	
Madoc	100 00
Maynooth	50 00
Stirling	100 00
Wollaston	100 00
Huron:	
Blyth	50 00
East Huron	50 00
Howick	50 00
Turnberry	50 00
Zurich	50 00
Kenora:	
Dryden	100 00
Kenora	100 00
Kent:	
East Kent	100 00
Harwich	100 00
Howard	100 00
Orford	100 00
Wallaceburg	100 00
Lambton:	
Brooke and Alvinston	100 00
East Lambton	50 00
Florence	100 00
Petrolia and Enniskillen	50 00
Plympton and Wyoming	50 00
Sombra	100 00
Leeds:	
Brockville	100 00
Landsowne	100 00
Lincoln:	
Clinton	50 00
Monck	100 00
Niagara Town and Tp	100 00
Manitoulin:	
Gore Bay	50 00
Middlesex:	
Caradoc	100 00
Dorchester	50 00
East Middlesex	50 00
London Township	100 00
McGillivray	50 00
Melbourne	50 00
Mosa and Ekfrid	100 00
North Middlesex	100 00
Strathroy	50 00
United Indian	50 00
Westminster	100 00

LEGISLATIVE GRANTS TO AGRICULTURAL SOCIETIES WHICH HELD FIELD CROP COMPETITIONS IN 1920

Muskoka:	
Gravenhurst and Muskoka	100 00
Medora and Wood	100 00
North Muskoka	100 00
South Muskoka	100 00
Stephenson and Watt	100 00
Nipissing:	
Bonfield	50 00
Sturgeon Falls	100 00
Verner	100 00
Norfolk:	
Courtland	100 00
Norfolk County	100 00
North Walsingham	50 00
Northumberland:	
Seymour	100 00
Wooler	100 00
Ontario:	
Beaverton	50 00
Oxford:	
East Nissouri	100 00
Ingersoll N. and W. Oxford	50 00
North Norwich	50 00
South Norwich	100 00
Tillsonburg	50 00
Parry Sound:	
Armour, Ryerson and Burk's Falls	100 00
Christie	100 00
Loring	50 00
Machar	100 00
Magnetawan	100 00
McKellar	100 00
McMurrich	100 00
Perry	100 00
Powassan	100 00
Rosseau	100 00
Strong	100 00
United Townships	100 00
Peel:	
Albion	100 00
Caledon	50 00
Peel	50 00
Toronto Township	100 00
Perth:	
Elma	50 00
Fullarton, Logan and Hibbert	100 00
Kirkton	100 00
Stratford	100 00
Peterborough:	
East Peterborough	50 00
Lakefield	50 00
Otonabee	100 00
Peterboro Industrial	100 00
Prescott:	
Alfred	100 00
Prince Edward:	
Ameliasburg	100 00
Prince Edward.—*Con.*	
Prince Edward	100 00
Sophiasburg	50 00
Rainy River:	
Atwood	100 00
Rainy River	100 00
Renfrew:	
Arnprior	100 00
Cobden	100 00
North Renfrew	100 00
Renfrew	100 00
Russell:	
Russell	100 00
Simcoe:	
Barrie	100 00
Coldwater	50 00
Nottawasaga and Great Northern	100 00
Sudbury:	
Warren	50 00
Timiskaming:	
Charlton	100 00
Cochrane	100 00
Englehart	100 00
New Liskeard	50 00
Thunder Bay	
Oliver	100 00
West Algoma	180 00
Whitefish Valley	00 00
Victoria:	
Eldon	100 00
Emily	50 00
Fenelon	50 00
Verulam	100 00
Waterloo:	
South Waterloo	100 00
Wilmot	50 00
Welland:	
Bertie	100 00
Fenwick	100 00
Wellington:	
Arthur	100 00
Centre Wellington	100 00
Erin	100 00
Mount Forest	100 00
Puslinch	100 00
Rockwood	100 00
Wentworth:	
Ancaster	100 00
Binbrook	50 00
Waterdown	50 00
West Flamboro	50 00
York:	
Markham and East York	100 00
Richmond Hill	100 00
Scarboro	100 00
Woodbridge	50 00
	$14,930 00

GRANTS TO SOCIETIES WHICH SUFFERED LOSSES IN GATE RECEIPTS THROUGH WET WEATHER.

BRUCE:	
Chesley	240 00
Paisley	72 00
BRANT:	
Six Nations	300 00
South Brant	300 00
DURHAM:	
Millbrook	300 00
Elgin:	
Aylmer and East Elgin	178 00
West Elgin	300 00
FRONTENAC:	
Kingston Industrial	300 00
GREY:	
Proton	300 00
Rocklyn	185 00
South Grey	300 00
HASTINGS:	
Belleville	241 00
HURON:	
Howick	97 00
KENT:	
Camden	300 00
LAMBTON:	
East Lambton	300 00
Sombra	77 00
MIDDLESEX:	
Caradoc	96 00
MUSKOKA:	
Gravenhurst and Muskoka	101 00
Stisted	33 00
NORFOLK:	
North Walsingham	50 00
OXFORD:	
South Norwich	80 00
PARRY SOUND:	
Armour, Ryerson and Burk's Falls	139 00
Loring	32 00
PETERBOROUGH:	
Lakefield	15 00
PRINCE EDWARD:	
Ameliasburg	177 00
RENFREW:	
Cobden	300 00
SIMCOE:	
Alliston	300 00
VICTORIA:	
Verulam	260 00
YORK:	
Sutton	179 00
	$5,552 00

Analysis of Prize Money Paid by Agricultural Societies in Ontario in 1920

Societies	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
ALGOMA:						
Bruce Mines	44 75	30 75	22 25	.....	137 50	235 25
Central Algoma	131 00	172 00	21 00	24 00	630 60	978 60
Iron Bridge	12 00	12 25	7 00	1 00	71 00	103 25
Johnston and Aberdeen	9 00	21 25	22 50	1 75	50 00	104 50
North Shore	12 25	30 75	13 00	5 75	72 25	134 00
St. Joseph Island	23 50	12 00	2 50	2 00	168 90	208 90
Thessalon	72 00	36 00	12 00	8 00	108 25	236 25
BRANT:						
Onondaga	75 00	78 00	28 00	41 50	226 05	448 55
Paris	281 00	116 00	200 00	95 00	465 60	1,157 60
South Brant	.....	.....	.....	.....	507 00	507 00
BRUCE:						
Arran and Tara	430 00	196 25	45 00	25 50	423 55	1,120 30
Carrick	275 00	168 00	45 00	45 00	382 95	915 95
Chesley	.....	.....	.....	.....	222 40	222 40
Eastnor	29 50	24 00	19 00	2 00	94 25	168 75
Hepworth	67 00	94 50	8 50	4 00	185 55	359 55
Huron Tp	94 25	55 75	43 00	21 50	254 05	468 55
Kincardine	109 50	38 50	10 50	5 00	167 80	331 30
Lucknow	159 25	107 00	30 00	30 25	278 30	604 80
North Bruce and Saugeen	145 00	114 00	16 00	2 00	270 90	547 90
Paisley	147 00	113 00	32 25	12 00	326 65	630 90
Pinkerton	63 00	33 50	5 25	9 00	174 50	285 25
Teeswater	251 00	281 50	28 50	44 50	387 25	992 75
Tiverton	135 00	65 75	40 00	11 00	201 83	453 58
Underwood	106 75	77 25	51 25	11 50	161 50	408 25
Wiarton	93 00	81 25	103 00	27 00	279 40	583 65
CARLETON:						
Carleton County	281 25	30 00	126 00	7 00	438 82	883 07
Carp	400 00	90 00	25 00	23 00	322 56	860 56
Fitzroy	184 00	65 00	.....	18 00	261 25	528 25
Metcalfe	210 20	128 16	87 00	80 00	367 00	872 36
DUFFERIN:						
Dufferin	324 00	120 00	51 50	15 00	435 90	946 40
Dufferin Central	190 50	160 00	50 50	12 50	474 25	887 75
East Luther	159 00	62 00	14 00	8 00	426 05	669 05
DUNDAS:						
Dundas	186 00	.....	.....	.....	.....	186 00
Mountain	90 25	279 25	.....	34 25	235 20	638 95
Winchester	153 00	136 00	15 50	6 25	281 65	592 40
DURHAM:						
Cartwright	115 00	47 50	42 50	2 00	216 10	423 10
Clarke Township	372 00	165 00	67 50	61 00	307 75	973 25
Millbrook	.....	.....	.....	.....	300 85	300 85
Port Hope	175 00	156 50	119 00	21 00	576 70	1,048 20
West Durham	343 00	221 00	163 00	69 00	547 45	1,343 45
ELGIN:						
Aldboro	145 00	63 75	31 00	21 00	300 45	561 20
Aylmer and E. Elgin	66 00	178 00	8 00	31 00	237 15	520 15
Shedden	106 75	77 25	26 50	8 25	72 05	290 80
South Dorchester	91 00	30 00	.....	2 50	282 55	406 05
Straffordville	18 00	52 50	19 75	1 00	104 95	196 20
West Elgin	274 87	214 38	103 20	30 50	458 25	1,081 20

Societies	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous	Total.
ESSEX:						
Amherstburg, Anderdon and Malden	57 00	49 50	39 25	67 50	170 80	384 05
Colchester South	122 50	118 50	70 75	85 50	243 40	640 65
Comber	28 75	52 75	43 75	31 25	264 25	420 75
Essex County	139 00	195 50	174 00	225 50	690 00	1,424 00
Mersea, Leamington and S. Gosfield	339 30	219 50	262 00	86 00	588 90	1,495 70
FRONTENAC:						
Kennebec	23 50	28 25	8 75	4 75	57 30	122 55
Kingston Industrial	380 00	842 50	197 00	89 00	1,645 30	3,153 80
Parham	42 50	31 50	14 75	15 50	144 80	249 05
Storrington	52 75	39 60	29 10	15 25	109 30	246 00
Wolfe Island	32 25	29 50	9 25	.....	154 70	225 70
GLENGARRY:						
Glengarry	292 00	117 50	43 00	17 75	216 75	687 00
Kenyon	225 50	215 25	16 00	17 00	205 05	678 80
St. Lawrence Valley	348 00	250 00	52 00	12 00	249 45	911 45
GRENVILLE:						
Kemptville	82 80	65 80	12 75	.....	123 10	284 45
Merrickville	120 50	29 00	.....	.....	175 15	324 65
Spencerville	63 00	51 25	3 75	5 00	262 50	385 50
GREY:						
Ayton	108 00	91 00	37 50	16 00	157 90	410 40
Collingwood Tp	374 50	101 50	47 00	43 00	237 75	803 75
Desboro	146 50	133 00	18 50	15 50	218 00	531 50
East Grey	58 00	42 50	29 00	22 25	171 75	323 50
Egremont	138 50	108 75	51 75	30 00	186 10	515 10
Hanover, Bentinck and Brant	143 00	23 00	82 50	22 00	228 95	499 45
Holland	139 50	73 00	33 50	40 50	269 95	556 45
Keppel and Sarawak	68 25	37 75	15 00	2 00	139 80	262 80
Kilsyth	200 50	223 50	26 50	23 50	228 00	702 00
Markdale	187 00	188 00	115 00	47 00	271 17	808 17
Meaford and St. Vincent	198 00	233 50	27 50	20 50	475 45	954 95
Normanby	28 50	38 50	14 25	6 25	128 10	215 60
Osprey	86 00	119 00	30 00	16 00	287 85	538 85
Owen Sound	471 50	325 00	82 75	55 00	636 40	1,570 65
Priceville	47 00	43 00	12 50	.....	122 50	225 00
Proton	66 00	41 25	35 50	.....	254 75	397 50
Rocklyn	.....	.....	.....	.....	183 15	183 15
South Grey	.....	.....	.....	.....	309 05	309 05
Sydenham	100 00	63 00	25 00	13 50	191 50	393 00
Walter's Falls	213 50	114 00	50 50	23 25	325 60	726 85
HALDIMAND:						
Caledonia	320 00	420 00	235 00	85 00	693 75	1,753 75
Canboro	17 25	2 50	13 75	1 00	71 70	106 20
Dunnville	102 00	47 50	21 00	.....	165 05	335 55
Haldimand	150 00	123 50	40 75	.....	230 10	544 35
Southern Branch	77 00	17 25	37 25	.....	153 00	284 50
Walpole	99 00	58 50	57 50	8 00	147 75	370 75
HALIBURTON:						
Glamorgan	3 50	4 25	4 00	.....	29 40	41 15
Haliburton	71 50	39 25	11 00	12 20	183 60	317 55
Minden	61 50	40 50	33 00	20 00	216 55	371 55
HALTON:						
Acton	345 00	140 00	64 00	2 00	333 10	884 10
Esquesing	252 00	149 00	110 00	30 00	285 35	826 35
Halton	300 00	301 00	90 00	29 00	524 69	1,244 69
Nelson and Burlington	278 50	87 00	66 00	.....	385 40	816 90
Trafalgar	1,819 50	530 00	296 00	47 00	1,049 45	3,741 95

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
HASTINGS:						
Bancroft	65 00	19 00	44 50	4 00	275 80	408 30
Belleville	345 00	169 00	118 50	68 00	449 55	1,150 05
Frankford	250 00	120 00	65 00	52 00	214 75	701 75
Madoc	297 25	94 25	27 50	32 50	381 35	832 85
Marmora	235 95	88 50	20 75	40 00	300 45	685 65
Maynooth	50 50	39 50	19 75	5 00	100 25	215 00
Shannonville	62 00	30 75	50 50	29 00	112 65	284 90
Stirling	125 50	83 75	22 50	38 00	276 20	545 59
Tweed	120 60	206 25	51 75	10 00	239 80	628 40
Wollaston	100 00	175 00	90 00	25 00	230 00	620 00
HURON:						
Bayfield	67 50	42 25	21 75	1 50	178 50	311 50
Blyth	96 00	78 00	29 50	30 00	237 75	471 25
Dungannon	69 50	64 00	18 00	21 00	148 75	321 25
East Huron	176 50	107 50	16 00	10 50	335 05	645 55
Exeter	173 62	162 00	49 00	33 00	381 00	798 62
Goderich Industrial	132 00	94 00	40 00	22 00	459 25	747 25
Howick	93 50	58 75	33 50	32 50	193 05	411 30
Seaforth	129 00	25 00	42 00	12 00	274 25	482 25
South Huron	(Spring Fair only.)					
Turnberry	121 00	39 50	29 00	29 00	248 45	466 95
Zurich	105 00	73 50	29 50	12 50	208 05	428 55
KENORA:						
Dryden	32 00	62 00	10 00	7 00	253 50	364 50
Kenora	135 00	62 00	.....	20 00	811 00	1,028 00
KENT:						
Camden	84 00	50 00	24 25	25 25	197 35	380 85
East Kent	162 00	97 50	27 50	61 50	227 70	576 20
Harwich	99 15	61 50	25 00	31 00	269 30	485 95
Howard	275 00	195 00	160 00	140 75	353 30	1,124 05
Orford	178 50	97 50	106 50	55 00	286 20	723 70
Raleigh and Tilbury	48 00	48 50	51 00	29 75	163 90	341 15
Romney and Wheatley	69 50	48 75	72 05	13 50	117 40	321 20
Wallaceburg	55 00	48 25	26 75	15 00	175 00	320 00
West Kent	118 00	127 25	182 00	91 00	483 15	1,001 40
LAMBTON:						
Bosanquet	53 75	39 50	7 25	8 50	321 20	430 20
Brooke and Alvinston	375 50	177 00	.....	.....	698 80	1,251 30
East Lambton	53 00	43 50	.....	24 00	216 35	336 85
Florence	143 00	111 50	61 50	9 50	209 35	534 85
Forest	74 00	176 50	36 50	28 50	357 35	672 85
Moore	236 00	191 00	71 25	23 00	270 60	791 85
Petrolia and Enniskillen	149 50	191 00	199 00	36 50	369 75	945 75
Plympton and Wyoming	128 75	14 50	139 25	32 90	291 60	607 00
Sombra	57 00	30 50	38 00	5 00	124 15	254 65
West Lambton	218 00	221 00	199 50	63 00	510 45	1211 95
LANARK:						
Dalhousie	39 00	25 75	11 25	1 00	173 25	250 25
Lanark Tp	91 25	64 75	14 00	22 50	234 45	426 13
Lanark Village and Bathurst	178 62	46 43	25 62	14 37	241 09	506 25
Maberly	26 25	18 75	6 25	2 75	114 25	168 05
North Lanark	710 00	164 25	71 00	49 00	512 80	1,507 55
Pakenham	295 00	20 00	25 00	.....	231 55	571 95
South Lanark	390 25	222 40	58 00	49 00	392 05	1,111 70
LEEDS:						
Brockville	298 00	218 00	96 50	31 50	739 75	1,383 75
Delta	142 61	195 30	76 05	46 35	246 88	707 19
Frankville	99 00	107 00	64 75	19 00	318 70	608 45
Lansdowne	87 00	59 25	28 50	22 00	171 50	368 25
Lombardy	123 41	38 84	10 50	3 50	189 77	366 02

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
LENNOX AND ADDINGTON:						
Addington	399 00	210 00	51 00	74 00	225 10	959 10
Amherst Island	70 55	36 10	11 45	4 25	85 85	208 20
Ernestown	340 00	58 75	56 00	11 50	176 55	642 80
Lennox	401 00	317 50	138 00	98 00	626 35	1,580 85
LINCOLN:						
Abingdon	49 00	47 50	68 50	10 75	42 15	217 90
Clinton Tp	128 00	59 75	72 00	36 00	410 20	705 95
Monck	80 25	60 00	77 00	.....	179 35	396 60
Niagara Town and Tp	107 00	.....	.....	.....	194 15	301 15
Peninsular Central	82 50	43 75	24 50	7 00	268 35	426 10
MANITOULIN ISLAND:						
Billings	45 25	25 00	55 50	.....	175 25	301 00
Gore Bay	164 00	92 00	68 00	13 00	298 45	635 45
Howland	68 00	35 00	9 00	6 50	254 50	373 00
Manitowaning	59 25	91 75	12 25	2 00	215 50	380 75
Providence Bay	54 50	46 00	24 50	.....	189 25	314 25
MIDDLESEX:						
Caradoc	89 00	22 50	22 50	4 00	256 15	394 15
Delaware	145 00	121 00	54 75	26 50	243 75	591 00
Dorchester	185 00	136 50	15 00	11 25	141 45	489 20
London Tp	153 00	81 00	42 00	4 00	161 20	441 20
McGillivray	34 50	10 75	4 50	3 00	110 00	162 75
Melbourne	332 00	147 00	57 00	17 00	304 00	857 00
Mosa and Ekfrid	180 50	180 25	30 00	15 00	330 00	735 75
North Middlesex	58 00	29 00	4 50	.....	156 65	248 15
Parkhill	82 50	49 50	16 25	8 25	273 60	430 10
Strathroy	371 00	216 00	108 50	35 50	572 00	1,303 00
Thorndale	109 50	177 75	51 00	28 75	221 75	588 75
Westminster	142 25	113 50	24 25	19 25	242 00	541 25
MUSKOKA:						
Baysville	33 00	44 00	22 00	2 00	139 40	240 40
Gravenhurst & Muskoka	19 00	44 00	.....	.....	314 99	377 99
Medora and Wood	42 00	105 50	5 00	5 00	256 00	413 50
Morrison	48 50	31 00	8 00	9 50	100 50	197 50
North Muskoka	83 00	43 75	16 25	4 00	407 50	554 50
South Muskoka	236 00	154 00	106 50	30 00	577 00	1,103 50
Stephenson and Watt	101 00	88 00	56 00	22 00	397 65	664 65
Stisted	19 00	32 00	18 75	10 25	117 25	197 25
NIPISSING:						
Astorville	30 50	25 50	11 00	4 00	75 70	147 70
Bonfield	28 50	38 00	7 00	1 50	106 80	181 80
East Nipissing	59 00	83 00	8 00	11 00	281 50	442 50
North Bay	64 00	41 00	.....	5 00	425 50	535 50
Sturgeon Falls	139 00	145 00	20 50	14 00	141 25	459 75
Verner	78 00	231 75	42 00	43 00	218 80	613 55
NORFOLK:						
Charlotteville	53 50	27 75	1 00	5 50	226 00	313 75
Courtland	40 00	25 00	19 50	.....	162 60	247 10
Houghton	48 50	78 00	32 50	13 00	127 95	299 95
Norfolk County	193 00	337 50	170 00	51 00	1,032 25	1,783 75
North Walsingham	32 00	19 75	9 00	2 00	101 55	164 30
Townsend	88 50	21 00	22 50	11 00	139 15	282 15
Windham	55 75	37 50	14 25	.....	164 05	271 55
NORTHUMBERLAND:						
Alnwick	96 00	65 75	47 25	14 00	253 95	476 95
Brighton	127 00	119 50	119 50	27 00	267 35	660 35
Cobourg Central	(No fair).					
Colborne	478 50	105 25	57 50	15 00	461 20	1,117 45
Cramahe	(No returns).					
Percy Township	695 50	448 95	158 50	65 50	766 40	2,134 85
Seymour	215 25	350 50	78 00	14 00	288 30	946 05
Wooler	266 50	119 15	16 75	17 00	125 75	545 15

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
ONTARIO:						
Beaverton	172 00	166 00	86 50	20 50	210 10	655 10
Brock	96 00	72 00	56 00	17 50	188 00	429 50
Port. Perry, Reach & Scugog	189 50	159 00	92 00	.....	280 00	720 50
Ramona	38 00	22 00	12 00	2 00	70 15	144 15
Scott	94 00	74 00	20 50	31 50	131 00	351 00
South Ontario	565 00	320 00	146 00	71 00	612 00	1,714 00
Uxbridge	285 00	178 00	134 00	16 00	48 50	661 50
OXFORD:						
Drumbo	298 00	68 00	120 00	12 50	466 75	965 25
East Nissouri	115 50	56 90	12 50	7 50	120 95	313 35
Ingersoll, N. & W.						
Oxford	167 00	64 50	23 00	.....	254 10	508 60
North Norwich	156 50	95 50	17 50	14 00	359 30	642 80
South Norwich	116 00	40 00	31 25	8 50	174 20	369 95
Tavistock	224 00	84 00	67 00	58 00	294 00	727 00
Tillsonburg and Dereham	223 00	103 50	46 50	24 50	312 00	709 50
West Zorra and Embro	195 00	45 00	23 50	21 00	248 75	533 25
Woodstock	350 00	538 00	133 00	55 00	932 00	2,008 00
PARRY SOUND:						
Armour, Ryerson and Burk's Falls	102 00	92 00	48 50	28 00	309 00	579 50
Christie	160 00	75 00	31 00	5 50	136 75	408 25
Loring	15 50	27 00	33 75	11 75	170 00	258 00
Machar	38 00	18 25	18 00	.....	161 75	236 00
Magnetawan	69 50	74 00	15 00	24 00	303 80	486 30
McKellar	103 00	123 25	58 25	31 50	326 00	642 00
McMurrich	53 00	82 75	17 00	22 50	190 50	365 75
Parry Sound	109 00	186 00	14 25	3 00	470 95	783 20
Perry	69 25	67 25	34 00	18 00	238 25	426 75
Powassan	81 25	79 00	70 00	25 00	260 50	515 75
Rosseau	76 00	83 00	21 50	2 50	286 00	469 00
Strong	94 75	47 50	48 50	3 50	245 50	439 75
Trout Creek	30 00	40 00	20 00	8 00	128 81	226 81
United Townships	28 50	51 25	29 00	2 50	293 75	405 00
PEEL:						
Albion and Bolton	288 00	99 00	85 50	30 00	383 00	885 50
Caledon	81 00	86 00	44 50	8 50	301 50	521 50
Cooksville	234 00	78 00	39 00	4 00	395 50	750 50
Peel	704 00	240 00	177 00	97 00	910 60	2,128 60
Toronto Gore	(Spring Fair only).					
Toronto Tp.	350 00	136 00	85 00	19 00	257 50	847 50
PERTH:						
Elma	90 00	58 75	10 00	12 50	213 75	385 00
Fullarton, Logan and Hibbert	131 00	154 00	69 00	44 00	450 80	848 80
Kirkton	134 00	157 00	23 50	9 00	289 70	613 20
Listowel	110 00	25 00	29 00	18 00	198 74	380 74
Mornington	176 25	63 25	23 50	21 00	255 75	539 75
South Perth	153 00	64 50	33 00	22 50	272 10	545 10
Stratford	301 00	233 00	135 00	42 00	512 00	1,223 00
PETERBOROUGH:						
East Peterborough	251 00	303 50	140 25	53 50	802 45	1,550 70
Galway	17 25	11 50	8 00	4 00	87 90	128 65
Lakefield	79 00	118 00	25 50	33 00	174 75	430 25
Otonabee	207 75	85 50	27 75	15 25	145 00	481 25
Peterborough Industrial	1,272 00	840 00	110 00	162 00	984 00	3,368 00
PRESCOTT:						
Alfred	83 00	104 00	33 50	33 50	184 90	438 90
South Plantagenet	99 50	112 50	19 75	24 50	126 55	382 80
Vankleek Hill	180 50	273 00	68 00	54 50	317 75	893 75

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
PRINCE EDWARD:						
Ameliasburg	52 25	38 00	40 75	7 00	277 00	415 00
Prince Edward	651 00	772 00	223 00	117 50	1,241 52	3,005 02
Sophiasburg	91 75	62 75	43 25	17 25	155 00	370 00
RAINY RIVER:						
Atwood	127 00	153 50	.....	51 00	465 95	797 45
Rainy River Valley	212 00	175 00	75 00	58 00	662 75	1,182 75
RENFREW:						
Arnprior	365 00	62 00	.....	.....	543 90	970 90
Cobden	243 00	104 75	41 00	36 50	345 75	771 00
North Renfrew	330 00	200 00	55 00	35 00	523 20	1,143 20
Renfrew	1,255 13	590 50	152 25	84 00	841 87	2,923 75
RUSSELL:						
Casselman	205 50	65 00	18 25	6 00	43 52	338 27
Clarence	62 75	50 75	21 50	4 50	112 85	252 3
Russell	254 00	171 65	175 00	37 00	320 60	958 35
SIMCOE:						
Alliston	.....	.....	.....	.....	323 20	323 20
Barrie	378 00	255 00	148 00	.....	731 35	1,512 25
Beeton	92 00	118 00	35 00	24 00	186 50	455 50
Bradford and W. Gwillimbury	126 00	26 00	69 00	46 00	470 00	737 00
Coldwater	155 00	110 00	61 00	45 00	266 00	637 00
Cookstown	116 00	13 00	51 00	19 00	346 25	545 25
East Simcoe	135 00	157 00	120 00	16 00	351 25	779 25
Flos Tp	227 00	124 00	39 00	4 00	308 45	702 45
Nottawasaga and Great Northern	187 00	128 00	231 50	41 00	531 60	1,119 10
Oro	141 00	91 00	22 00	4 00	203 75	461 75
Tiny and Tay	253 00	133 00	113 00	33 00	441 25	973 25
STORMONT:						
Cornwall	195 50	202 00	78 50	3 00	952 25	1,431 25
Finch	59 50	65 00	3 00	6 50	89 25	223 25
Roxborough	330 00	239 25	36 00	9 00	255 51	869 76
Stormont	239 50	125 00	45 00	19 50	202 95	631 95
SUDBURY:						
Chelmsford	58 50	146 00	29 00	9 00	114 25	356 75
Ma tland and Cosby	56 50	31 00	11 00	7 00	63 50	169 00
Massey	111 00	94 25	21 25	14 25	182 75	423 50
Warren	107 00	175 00	34 00	47 00	104 27	467 27
TIMISKAMING:						
Charlton	35 00	36 00	10 00	6 00	204 90	291 90
Cochrane	74 00	42 00	.....	6 00	137 75	259 75
Englehart	67 00	64 00	17 00	.....	318 35	466 35
Matheson	(No returns).					
New Liskeard	84 50	27 50	16 00	.....	519 80	647 80
Porquis Jct	5 50	15 50	.....	4 25	65 05	90 30
THUNDER BAY:						
Oliver	77 00	165 50	20 00	17 00	322 25	611 75
Ware Tp	3 00	8 50	.....	.....	101 50	113 00
West Algoma	94 00	150 00	.....	4 00	1,241 25	1,489 25
Whitefish Valley	37 00	23 50	13 00	14 00	164 75	252 25
VICTORIA:						
Eldon	47 00	90 00	48 00	18 00	93 85	296 85
Fenelon	152 00	94 00	30 00	12 00	210 50	498 50
Mariposa	92 00	54 50	28 00	11 00	116 05	301 55
South Victoria	713 50	726 00	556 00	101 00	746 70	2,843 20
Verulam	177 50	171 50	33 50	27 75	264 00	674 25

Societies.	Horses.	Cattle.	Sheep.	Swine.	Miscellaneous.	Total.
WATERLOO:						
Elmira and Woolwich	238 50	41 50	11 00	4 00	257 80	552 80
South Waterloo	501 00	182 00	115 00	68 00	725 50	1,591 50
Wellesley and N. Easthope	223 00	84 00	67 00	25 00	432 70	831 70
Wilmot	343 00	220 00	102 00	63 00	711 35	1,439 35
WELLAND:						
Bertie	39 00	52 00	22 50	10 75	130 00	254 25
Fenwick	103 50	59 75	87 00	47 00	524 25	821 50
Thorold Town and Tp	190 00	93 00	40 00	.....	202 05	525 05
Welland	284 00	202 00	113 00	17 00	835 80	1,451 80
WELLINGTON:						
Arthur	187 30	137 80	28 00	5 00	344 10	702 20
Centre Wellington	103 50	165 00	77 75	16 00	536 10	898 35
Erin	231 75	48 50	14 00	37 00	388 00	719 25
Mount Forest	259 00	132 00	60 00	57 00	337 40	845 40
Palmerston	97 00	93 50	32 00	9 00	192 25	423 75
Peel and Drayton	186 00	71 00	18 00	11 00	232 00	518 00
Puslinch	60 00	84 00	17 50	8 50	229 25	399 25
Rockwood	168 50	164 05	51 00	19 00	474 90	877 45
West Wellington	149 50	62 00	23 50	40 50	326 60	602 10
WENTWORTH:						
Ancaster	180 00	62 00	78 00	10 00	300 50	630 50
Binbrook	89 00	100 00	77 50	.....	281 10	547 60
Hamilton and Wentworth	(No fair).					
Rockton	394 00	135 50	97 00	16 50	464 35	1,107 35
Waterdown	91 00	75 00	.....	3 00	349 65	518 65
West Flamboro	97 00	28 00	34 00	14 00	245 00	418 00
YORK:						
Markham and East York	353 00	290 00	299 00	110 00	641 05	1,693 05
Newmarket	292 00	240 00	170 00	91 00	626 25	1,419 25
Queensville	100 00	61 00	49 00	8 00	122 75	340 75
Richmond Hill	349 00	161 00	27 00	57 00	116 95	710 95
Scarboro	281 00	139 00	45 00	40 00	422 25	927 25
Schomberg	248 00	95 00	38 00	41 00	408 75	830 75
Sutton	275 00	163 00	25 00	21 00	231 00	715 00
Weston, York, and Etobicoke	345 00	60 00	115 00	15 00	652 20	1,187 20
Woodbridge	954 00	355 00	220 00	58 00	841 25	2,428 25
INDIAN SOCIETIES:						
Garden River	48 35	22 35	.....	13 00	91 75	175 45
Sarnia Reserve	12 50	22 75	.....	2 00	131 00	168 25
Six Nations	.....	31 00	7 25	3 00	242 72	283 97
United Indian	73 00	45 00	.....	23 00	133 60	274 60
CITIES:						
Canadian National (Toronto)	12,358 00	15,817 00	4,110 00	3,890 00	13,147 75	49,322 75
Central Canada (Ottawa)	5,323 25	3,120 00	1,088 00	674 00	6,600 25	16,805 50
Western Fair (London)	4,845 00	5,552 00	2,169 50	1,846 00	6,915 00	21,327 50
Totals	78,817 46	62,036 21	24,412 97	14,152 07	128,744 16	308,162 87

REPORTS OF STOCK SOCIETIES.

Societies.	Receipts					Expenditure			
	Legislative Grant	Members Fees For 1920	Municipal Grant	Sale of Stock	Total Actual Receipts	Purchase of Live Stock	Keep of Stock	Officers Salaries	Total Actual Expenditure
	$	$	$	$	$	$	$	$	$
Colchester, North	250	281	150	.....	705	340	90	10	462
Cottam	300	647	150	.....	1,105	934	60	25	1,061
Drummond	90	60	50	216	416	300	163	10	485
Dummer and Douro	330	109	.....	335	1,002	295	530	17	876
Emily	170	168	100	123	621	.....	242	18	336
Lakehurst	170	60	.....	.....	130	130	.....	.....	130
Oldcastle	410	871	150	34	1,465	925	430	69	1,445
Osgoode	250	60	.....	35	379	35	367	15	417
South Woodslee	779	1,306	150	.....	2,267	1,822	360	81	2,360
	2,749	3,562	750	743	8,090	4,781	2,242	245	7,572

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1920.

SOCIETIES	RECEIPTS							EXPENDITURE					
	Legislative grants.	Municipal grants.	Cash Donations.	Members' fees retained from 1919.	Members' fees paid in 1920.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
	$	$	$	$	$	$	$	$	$	$	$	$	$
ALGOMA:													
Bruce Mines	264	25	80	35	62	245	819	235	128	75	330	682	1,500
Central Algoma	834	.....	20	83	454	1,187	34,616	978	1,001	300	979	31,702	49,763
Iron Bridge	111	.....	.....	23	13	23	172	103	.....	13	121	162	.....
Johnston and Aberdeen	141	.....	6	19	7	55	222	104	.....	10	116	157	.....
North Shore	165	.....	2	23	18	9	344	134	.....	20	186	341	290
St. Joseph Island	240	20	.....	34	15	62	472	209	.....	15	261	427	.....
Thessalon	311	.....	5	50	17	201	814	236	.....	30	320	822	3,000
BRANT:													
Onondaga	160	400	425	50	57	192	1,694	449	288	52	542	1,564	225
Paris	416	150	279	90	218	957	2,650	1,158	97	386	1,268	2,900	8,980
South Brant	414	450	258	66	181	.....	2,773	507	86	239	529	4,630	7,900
Bruce;													
Arran and Tara	322	300	50	94	44	569	1,709	1,120	145	64	1,186	1,827	2,150
Carrick	257	280	14	81	350	263	1,392	916	55	42	997	1,404	.....
Chesley	222	225	65	68	66	.....	938	222	.....	50	296	601	.....
Eastnor	73	215	12	51	10	208	981	169	149	23	247	1,861	1,500
Hepworth	166	210	56	70	38	253	911	360	84	67	450	853	.....
Huron Tp	197	200	43	59	49	478	1,856	469	624	112	565	1,778	3,100
Kincardine	155	150	111	59	22	560	1,362	331	432	95	369	1,197	.....
Lucknow	240	185	187	102	17	407	1,528	605	.....	50	689	1,523	1,000
North Bruce and Saugeen	206	190	10	84	30	314	1,145	548	193	64	629	1,789	.....
Paisley	225	225	17	75	91	331	1,488	631	67	120	663	1,351	.....
Pinkerton	97	210	50	29	23	55	555	285	11	30	340	530	300
Teeswater	279	175	205	116	52	766	2,001	939	301	75	1,107	1,895	1,375
Tiverton	140	175	45	59	18	233	1,177	465	44	35	474	1,044	2,425
Underwood	137	200	63	87	13	113	733	408	.....	42	423	920	.....
Wiarton	199	205	87	76	53	482	1,469	584	199	104	706	1,487	3,275

CARLETON:													
Carleton County	349	1,000	293	60	94	1,168	3,306	883	.....	115	925	2,107	5,100
Carp	341	600	67	79	38	538	1,982	860	67	125	1,031	2,066	6,950
Fitzroy	207	500	215	50	25	185	1,587	528	.....	125	633	1,290	450
Metcalfe	288	700	335	75	75	574	2,707	892	125	150	1,044	2,122	6,800
DUFFERIN:													
Dufferin	349	350	443	99	407	1,041	3,441	946	540	295	1,147	4,857	8,650
Dufferin Central	331	300	268	94	95	1,118	2,750	888	505	168	966	2,446	6,025
East Luther	286	275	122	84	98	610	2,538	669	380	85	778	2,516	5,600
DUNDAS:													
Dundas	61	.....	87	60	62	3,350	4,004	186	1,427	80	268	2,955	1,675
Mountain	212	175	214	69	120	884	2,220	548	396	75	699	2,961	2,000
Winchester	217	.....	463	64	124	1,252	3,591	592	926	100	667	2,653	.....
DURHAM:													
Cartwright	144	38	20	53	195	219	898	423	27	33	507	786	.....
Clarke Tp	323	186	162	93	70	570	2,002	973	91	100	1,025	1,780	3,500
Millbrook	312	1,433	38	83	17	.....	3,348	301	115	126	407	4,610	8,950
Port Hope	370	399	125	101	99	811	2,994	1,048	965	150	1,100	3,244	1,711
West Durham	459	273	418	103	60	1,323	3,869	1,343	727	225	1,425	3,564	6,600
ELGIN:													
Aldboro	224	240	80	81	39	1,074	2,486	561	285	106	664	1,788	6,812
Aylmer and East Elgin	206	377	147	.....	559	453	2,524	520	538	10	576	3,349	.....
Shedden	94	223	94	32	22	280	870	291	179	42	291	769	120
South Dorchester	192	231	59	31	138	232	1,050	406	236	95	462	969	.....
Straffordville	102	141	7	26	72	155	729	196	100	40	261	692	695
West Elgin	342	287	35	101	35	1,085	2,941	1,082	428	129	1,191	2,892	2,600
ESSEX:													
Amherstburg, Anderdon and Malden	209	300	137	42	20	265	4,426	384	80	40	530	3,691	700
Colchester South	206	150	99	62	72	520	1,386	641	200	87	664	1,395	3,000
Comber	159	150	175	55	36	425	1,139	421	155	48	458	1,176	5,000
Essex County	549	1,350	275	118	288	2,071	5,201	1,424	967	185	1,472	6,202	10,600
Mersea, Leamington and S. Gosfield	450	375	269	143	1,341	2,923	7,467	1,496	1,014	136	1,574	7,185	21,040
FRONTENAC:													
Kennebec	76	100	.....	26	14	80	291	123	25	27	145	241	.....

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1920.

SOCIETIES	RECEIPTS							EXPENDITURE					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1919.	Members' fees paid in 1920.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
FRONTENAC CONT'D:													
Kingston Industrial	734	900	1,816	133	186	3,701	12,546	3,154	2,630	610	3,310	16,928	675
Parham	164	.....	83	46	45	304	709	249	152	32	291	670	986
Storrington	78	100	75	29	74	283	940	246	162	52	272	972	2,600
Wolfe Island	100	125	249	39	45	243	876	226	209	30	265	798	.....
Glengarry	204	90	135	69	44	755	2,029	687	99	70	717	1,792	.....
Kenyon	146	100	49	61	824	483	2,566	679	.....	100	724	2,537	7,750
St. Lawrence Valley	325	.....	148	94	96	485	1,360	911	35	75	1,288	1,847	4,700
GRENVILLE:													
Kemptville	.....	.....	122	62	44	783	1,172	284	427	60	315	1,168	100
Merrickville	166	150	65	94	11	281	1,285	325	95	85	345	1,274	1,475
Spencerville	153	150	79	63	66	1,334	2,674	385	360	75	418	2,025	2,500
GREY:													
Ayton	110	240	68	39	64	107	637	410	40	34	412	601	.....
Collingwood Tp	163	300	182	40	84	431	1,265	804	35	80	854	1,202	425
Desboro	215	290	86	100	64	239	1,027	531	36	38	561	991	300
East Grey	129	175	7	53	45	206	1,031	323	244	63	374	1,006	1,765
Egremont	160	250	74	62	38	230	1,292	515	194	33	523	1,097	3,860
Hanover, Bentinck and Brant	173	225	129	61	83	952	1,973	499	433	60	551	1,683	1,750
Holland	207	195	31	88	93	266	1,117	556	75	50	658	1,130	.....
Keppel and Sarawak	110	195	30	62	34	56	729	263	31	52	335	679	75
Kilsyth	243	250	66	87	161	251	1,330	702	25	55	791	1,341	3,100
Markdale	254	200	6	98	37	847	1,890	808	118	96	833	1,504	292
Meaford and St. Vincent	263	300	227	7	131	711	2,716	955	35	110	1,040	1,910	13,650
Normanby	84	175	5	56	8	62	400	216	46	27	216	362	.....
Osprey	138	190	36	54	15	301	1,063	538	155	64	624	1,063	880
Owen Sound	.....	150	384	140	49	1,729	3,002	1,571	430	160	1,620	3,603	3,175
Priceville	101	165	2	36	23	133	613	225	88	32	245	449	850
Proton	240	150	10	89	37	157	1,396	397	20	70	517	1,050	4,200
Rocklyn	207	150	8	68	90	.....	897	183	.....	72	270	768	3,850

GREY CONT'D:													
South Grey	157	150	59	55	105	.....	1,097	309	265	60	367	1,084	4,300
Sydenham	136	200	58	69	95	77	696	393	.....	42	407	626	500
Walter's Falls	220	215	201	79	113	200	1,531	727	15	95	861	1,621	1,300
HALDIMAND													
Caledonia	531	50	.....	79	89	5,152	7,508	1,754	1,255	258	1,756	5,221	8,111
Canboro	62	112	20	22	33	100	395	106	.....	20	106	301	.....
Dunnville	143	125	.....	45	90	1,287	2,425	336	605	100	382	1,818	7,000
Haldimand	213	100	27	40	60	755	1,893	544	693	90	599	1,888	4,300
Southern Branch	116	75	66	.....	82	250	742	284	100	37	321	721	400
Walpole	193	150	58	.....	254	257	1,138	371	503	125	463	1,546	550
HALIBURTON:		.....	.....	10	7	9	23	41	.....	.....	41	41	260
Glamorgan	.....	50	10	46	20	148	714	318	69	52	324	540	.....
Haliburton	274	.....	.....	31	14	153	508	372	.....	30	396	663	755
Minden	297												
HALTON:													
Acton	260	100	171	74	92	619	1,565	884	62	75	891	1,459	186
Esquesing	250	250	408	78	70	456	1,681	826	420	79	874	1,766	200
Halton	436	300	525	81	63	1,247	3,467	1,245	449	245	1,383	3,398	10,700
Nelson and Burlington	279	275	207	62	93	730	2,249	817	228	125	876	2,135	340
Trafalgar	800	2,050	2,220	167	318	3,043	11,429	3,742	1,003	.....	3,754	11,771	32,444
HASTINGS:													
Bancroft	228	100	176	55	50	912	1,698	408	202	85	483	1,147	2,075
Belleville	354	600	298	62	69	2,054	4,328	1,150	1,101	153	1,190	3,860	.....
Frankford	253	100	188	61	88	689	1,745	702	65	100	734	1,631	560
Madoc	283	100	234	139	19	1,287	3,237	833	266	95	990	3,224	416
Marmora	199	150	92	80	58	742	2,454	686	59	53	788	2,006	2,600
Maynooth	105	100	8	31	23	52	438	215	10	37	252	402	.....
Shannonville	134	100	.....	28	33	463	1,332	285	205	100	319	925	275
Stirling	199	100	1,348	167	96	1,149	6,023	546	292	50	662	7,939	7,650
Tweed	212	100	20	86	45	1,404	2,222	628	240	100	707	1,601	.....
Wallaston	260	135	53	57	33	194	945	620	45	30	701	945	2,125
HURON:													
Bayfield	121	50	35	71	202	169	901	311	124	54	311	811	2,250
Blyth	128	95	35	64	28	439	1,186	471	225	80	528	1,306	2,700
Dungannon	133	60	16	116	15	605	1,221	321	250	83	328	971	.....
East Huron	232	45	34	105	78	565	1,820	647	572	75	698	1,826	5,600
Exeter	234	55	28	68	160	763	1,637	799	307	89	906	2,109	.....
Goderich Industrial	246	50	85	72	78	2,388	3,537	747	941	100	761	2,719	.....
Howick	188	130	37	88	27	213	1,660	411	36	60	471	1,733	.....
Seaforth	189	.....	64	79	137	496	1,293	482	301	65	529	1,711	2,340

REPORTS OF AGRICULTURAL SOCIETIES IN ONTARIO, SHOWING RECEIPTS AND EXPENDITURE FOR THE YEAR 1920.

SOCIETIES	RECEIPTS							EXPENDITURE					
	Legislative grants.	Municipal grants.	Cash donations.	Members' fees retained from 1919.	Members' fees paid in 1920.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure.	Value of land and buildings.
HURON CONT'D:													
South Huron	Spring	Fair	only).										
Turnberry	187	155	22	63	126	505	1,375	467	322	75	616	2,155	1,050
Zurich	14	50	41	77	53	375	1,087	429	131	56	472	1,159	1,700
KENORA:													
Dryden	335	.....	116	30	29	59	685	364	.....	68	423	710	1,200
Kenora	550	285	416	33	36	322	2,143	1,028	110	320	1,304	2,723	570
KENT:													
Camden	133	155	60	44	108	152	1,081	381	20	88	401	1,707	4,762
East Kent	221	130	131	73	82	667	2,036	576	402	120	744	1,686	7,450
Harwich	220	225	50	70	50	896	2,160	486	412	140	707	1,898	3925
Howard	373	200	17	109	66	2,557	4,062	1,124	385	175	1,273	2,500	8,150
Orford	262	300	120	118	86	307	1,674	724	40	60	864	1,686	3,300
Raleigh and Tilbury	157	900	271	47	50	2,011	2,011	341	103	50	349	1,163	2,800
Romney and Wheatley	132	350	2	72	103	349	1,084	321	180	59	344	1,067	3,700
Wallaceburg	131	265	25	98	114	623	1,740	320	503	75	396	2,175	5,163
West Kent	322	600	186	64	128	4,698	7,056	1,001	3,622	253	1,096	7,301	27,100
LAMBTON:													
Bosanquet	164	165	119	59	85	278	1,025	430	239	50	462	1,040	3,510
Brooke and Alvinston	337	225	235	77	59	1,156	3,175	1,251	485	152	1,440	3,289	7,050
East Lambton	281	100	56	61	29	11	932	337	.....	50	406	741	900
Florence	188	325	24	97	58	288	1,349	535	108	60	620	1,125	2,825
Forest	264	270	67	86	111	557	1,602	673	300	120	733	1,610	4,625
Moore	286	250	345	82	130	732	2,178	792	289	104	865	1,800	2,700
Petrolia and Enniskillen	383	500	.....	71	33	816	2,335	946	745	100	1,059	2,726	3,000
Plympton and Wyoming	208	150	40	53	78	262	928	607	40	11	669	998	1,610
Sombra	121	250	63	32	24	117	997	255	104	50	375	999	1,080
West Lambton	429	375	1,173	90	43	2,543	6,261	1,212	1,793	510	1,261	7,837	10,300

LANARK:													
Dalhousie	104	50	.....	53	165	207	932	250	35	75	291	970	2,465
Lanark Tp	125	50	104	49	42	786	1,808	427	10	79	475	1,974	3,000
Lanark Village and Bathurst	172	100	118	57	20	436	1,076	506	47	106	532	1,075	1,305
Maberly	80	50	47	64	6	210	1,072	168	72	68	170	1,014	1,580
North Lanark	449	450	659	49	159	1,731	4,015	1,507	845	210	1,618	4,645	18,250
Pakenham	183	104	226	60	37	36 7	1,164	572	60	52	580	1,082	3,290
South Lanark	347	475	779	130	9	1,724	4,908	1,112	2,284	135	1,142	5,567	11,600
LEEDS:													
Brockville	453	150	705	75	87	3,073	6,347	1,384	3,268	200	1,454	7,376	3,520
Delta	166	150	129	55	51	1,209	2,484	707	882	90	787	2,719	4,000
Frankville	166	150	25	173	10	298	942	608	188	50	644	1,134	450
Lansdowne	211	150	110	63	78	968	2,490	368	424	107	546	2,006	7,375
Lombardy	144	144	54	119	16	245	760	238	35	46	384	654	150
LENNOX AND ADDINGTON:													
Addington	126	1,000	307	46	201	424	2,176	959	95	50	993	2,486	1,200
Amherst Island	140	200	144	50	11	26	574	208	16	25	222	295	.....
Ernestown	155	400	31	54	37	562	1,327	643	65	87	651	979	2,729
Lennox	300	800	200	67	630	2,533	6,051	1,581	1,710	.....	1,660	6,061	.....
LINCOLN:													
Abingdon	70	175	.....	56	40	297	1,111	394	366	40	236	1,081	1,200
Clinton Tp	264	370	.....	.....	334	2,201	6,831	706	1,315	90	777	4,899	6,620
Monck	81	225	209	41	65	327	1,230	397	545	75	449	1,509	1,840
Niagara Town and Tp	96	300	241	49	70	124	1,235	301	192	75	353	1,237	.....
Peninsular Central	102	50	32	40	115	673	1,477	426	422	70	451	1,641	3,450
MANITOULIN:													
Billings	333	25	23	37	7	80	540	301	.....	35	321	378	2575
Gore Bay	477	.....	33	52	12	191	845	635	.....	89	684	964	.....
Howland	245	.....	.....	46	10	103	435	373	.....	52	391	487	1,075
Manitowaning	337	25	11	8	46	141	641	381	.....	76	426	1,007	1,820
Providence Bay	324	.....	37	38	16	164	591	314	.....	20	323	536	425
MIDDLESEX:													
Caradoc	149	200	151	44	91	160	1,379	394	211	50	493	1,310	2,500
Delaware	201	85	212	50	92	605	1,505	591	332	35	596	1,847	650
Dorchester	226	75	268	.....	104	1,106	1,982	489	253	104	529	1,394	.....
London Tp	140	240	325	73	62	320	1,544	441	171	62	526	1,473	2,750
McGillivray	67	50	20	35	13	193	602	163	6	25	188	431	.....
Melbourne	269	100	121	83	39	679	1,389	857	108	50	884	1,473	3,025

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	Legislative grants	Municipal grants.	Cash Donations.	Members fees' retained from 1919.	Members' fees paid in 1920.	Gate receipts at exhibitions.	Total actual receipts.	Total prize money paid in cash.	Special attractions.	Officers' salaries.	Total expenditure for agricultural purposes.	Total actual expenditure	Value of land and buildings.
MIDDLESEX CONT'D:													
Mosa and Ekfrid	216	150	249	65	33	477	1,593	736	335	60	813	1,734	4,620
North Middlesex	133	.....	78	66	29	486	1,288	248	310	85	307	1,087	870
Parkhill	153	50	260	60	12	652	1,393	430	269	55	430	1,248	2,500
Strathroy	545	300	271	81	94	2,196	5,287	1,303	1,630	154	1,330	4,306	16,200
Thorndale	158	125	206	47	106	274	1,379	589	279	65	658	1,421	2,625
Westminster	144	100	250	31	78	232	1,034	541	183	50	607	1,189	215
MUSKOKA:													
Baysville	212	.....	26	36	9	16	299	240	.....	25	286	349	35
Gravenhurst and Muskoka	425	25	64	70	17	12	821	378	.....	85	469	780	400
Medora and Wood	420	10	48	50	30	99	765	413	.....	50	514	776	.....
Morrison	132	.....	.....	23	20	71	255	197	50	30	229	401	985
North Muskoka	486	75	349	76	40	275	1,695	554	100	80	646	1,382	4,650
South Muskoka	900	155	592	118	55	1,267	3,328	1,103	592	105	1,237	2,617	2,950
Stephenson and Watt	447	50	23	48	19	146	1,222	665	40	90	771	1,298	1,100
Stisted	228	.....	10	39	8	.....	307	197	.....	17	231	304	1,035
NIPISSING:													
Astorville	145	.....	10	18	23	.....	218	148	.....	20	148	217	600
Bonfield	183	25	.....	24	11	23	596	182	.....	30	226	449	1,140
East Nipissing	377	.....	45	31	8	129	641	442	.....	60	460	634	.....
North Bay	138	700	89	55	63	1,310	3,206	535	625	85	567	2,719	100
Sturgeon Falls	495	300	.....	46	41	726	2,393	460	404	106	572	2,295	8,590
Verner	466	75	.....	53	22	194	1,408	614	273	20	681	6,668	.....
NORFOLK:													
Charlotteville	144	.....	58	13	186	395	856	314	43	87	368	656	5,900
Courtland	126	50	53	25	110	112	623	247	80	59	299	673	.....
Houghton	123	.....	49	31	140	320	706	300	.....	135	320	656	1,450
Norfolk County	644	1,500	869	.....	641	5,486	3,166	1,784	1,091	450	1,887	12,012	40,000
North Walsingham	101	.....	44	19	158	91	539	164	.....	52	207	469	.....

NORFOLK—CONT'D:													
Townsend	98	.....	52	37	133	284	1,401	282	.....	75	318	1,249	2,300
Windham	110	25	74	18	88	161	881	272	7	40	453	898	700
NORTHUMBERLAND:													
Alnwick	152	41	672	58	87	507	1,917	477	346	52	515	1,689	800
Brighton	252	25	73	95	17	458	1,152	660	290	50	664	1,562	.....
Cobourg Central	(No Fa	ir).											
Colborne	303	81	312	112	72	845	2,211	1,078	95	58	1,108	1,736	950
Cramahe	(No ret	urns—	).										
Percy Tp	537	143	576	109	56	1,729	3,786	2,135	35	90	2,194	3,347	5,050
Seymour	289	277	421	285	210	753	2,195	947	211	116	1,111	2,050	3,950
Wooler	162	168	160	47	34	557	1,350	545	40	40	629	1,072	875
ONTARIO:													
Beaverton	232	150	181	58	116	589	2,513	655	658	135	831	2,340	.....
Brock	188	200	215	50	67	255	1,322	429	318	65	455	1,283	.....
Port Perry, Reach and Scugog	240	300	208	52	37	562	2,022	720	130	50	731	1,551	1,860
Ramona	40	100	15	23	36	47	318	144	.....	12	160	210	386
Scott	128	175	192	40	45	124	920	351	57	51	365	885	.....
South Ontario	610	750	659	129	57	4,013	9,144	1,714	1,437	210	1,722	7,632	8,850
Uxbridge	207	100	.....	48	48	1,339	2,473	661	788	174	663	2,380	.....
OXFORD:													
Drumbo	335	100	68	57	87	656	1,823	965	79	92	985	1,655	335
East Nissouri	142	125	150	20	220	99	1,215	313	250	54	397	1,170	.....
Ingersoll, N. and W. Oxford	181	275	145	33	160	631	1,845	509	353	50	560	1,465	2,600
North Norwich	216	235	309	56	160	435	2,017	643	496	100	670	2,234	2,000
South Norwich	144	175	140	.....	114	80	1,022	370	118	62	452	990	.....
Tavistock	281	285	136	73	29	603	1,937	727	50	72	763	1,414	.....
Tillsonburg and Dereham	277	125	120	70	242	685	1,922	709	491	105	756	2,060	8,000
West Zorra and Embro	208	100	20	63	227	440	1,101	533	50	47	592	827	550
Woodstock	450	415	714	91	229	2,417	6,551	2,008	998	250	2,191	6,709	20,400
PARRY SOUND:													
Armour, Ryerson and Burk's Falls	636	100	375	68	32	50	1,782	579	.....	100	688	1,748	3,050
Christie	388	50	14	51	20	23	927	408	.....	54	495	870	55
Loring	299	.....	7	47	7	18	486	258	.....	27	309	465	.....
Machar	272	.....	.....	33	10	68	689	236	.....	43	280	569	2,825
Magnetawan	403	.....	116	62	37	61	886	486	26	59	600	948	600
McKellar	562	25	44	72	12	81	1,196	642	.....	46	718	1,266	2,300
McMurrich	376	25	126	42	11	72	1,051	366	.....	80	469	1,082	1,230
Parry Sound	623	455	.....	84	74	729	2,795	783	634	210	826	2,919	7,600

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PARRY SOUND, CONT'D:	443	.....	338	40	8	112	1,115	427	.....	110	516	1,121	2,420
Perry	461	.....	245	52	22	204	1,948	516	94	87	605	1,995	1,836
Powassan	493	15	71	65	23	107	1,034	469	.....	77	580	853	.....
Rosseau	427	.....	99	42	11	107	797	440	.....	33	517	735	1,911
Strong	130	.....	.....	.....	152	.....	1,004	227	.....	25	245	994	398
Trout Creek	352	.....	79	68	37	24	1,157	405	.....	29	469	932	.....
United Townships													
PEEL:	280	300	109	83	79	522	1,792	885	374	60	961	2,098	2,200
Albion and Bolton	160	270	242	51	230	334	1,613	521	311	150	647	1,583	745
Caledon	280	150	399	127	56	543	1,717	750	65	160	799	1,749	2,000
Cooksville	490	465	830	84	82	1,843	5,338	2,129	479	409	2,176	5,450	8,300
Peel	(Spring	Fair	Only)										
Toronto Gore	306	275	212	157	51	286	1,943	847	157	108	972	1,937	3,200
Toronto Tp													
PERTH:	131	30	321	84	229	187	1,328	385	.....	77	410	1,416	2,400
Elma	334	225	372	137	17	720	2,057	849	260	100	971	2,569	3,617
Fullarton, Logan and Hibbert	223	50	106	87	291	259	1,278	613	110	104	724	1,401	2,500
Kirkton	158	10	110	68	15	494	1,132	381	348	80	421	1,287	2,250
Listowel	222	.....	12	87	333	182	2,312	540	250	132	582	1,869	5,200
Mornington	223	200	57	85	171	683	2,056	545	227	110	555	1,579	6,500
South Perth	455	190	636	111	207	2,909	6,583	1,223	1,918	250	1,296	5,544	.....
Stratford													
PETERBOROUGH:	464	1,000	263	89	63	1,905	4,723	1,551	533	154	1,633	5,050	4,735
East Peterborough	90	350	89	30	14	277	861	129	384	25	130	1,006	2,600
Galway	155	485	32	57	26	380	1,443	430	151	50	534	1,227	4,500
Lakefield	150	375	90	76	26	243	1,411	481	297	50	545	1,525	1,250
Otonabee	800	5,000	1,402	171	98	8,385	20,165	3,368	4,257	205	3,448	19,836	25,081
Peterboro Industrial													

PRESCOTT:													
Alfred	151	100	51	93	97	740	1,594	439	367	40	514	1,852	2,600
South Plantagenet	131	100	89	45	15	322	800	383	39	40	449	695	300
Vankleek Hill	382	100	208	83	198	1,374	3,387	894	.....	137	931	2,395	8,100
PRINCE EDWARD:													
Ameliasburg	200	150	25	61	68	169	1,014	415	20	77	481	957	.....
Prince Edward	724	700	462	56	1,854	3,878	13,802	3,005	3,216	306	3,114	17,240	39,400
Sophiasburg	124	150	71	53	24	245	745	370	35	35	407	757	.....
RAINY RIVER:													
Atwood	574	80	452	72	51	101	1,418	797	75	125	1,001	1,657	.....
Rainy River Valley	682	515	1,411	96	40	1,171	4,377	1,183	525	210	1,263	4,694	5,065
RENFREW:													
Arnprior	335	325	262	155	428	1,084	3,551	971	262	215	1,069	3,440	6,450
Cobden	255	565	328	168	40	107	6,371	771	.....	104	954	5,042	9,300
North Renfrew	413	285	561	64	151	1,235	4,248	1,143	768	158	1,281	4,668	19,750
Renfrew	699	735	718	.....	461	4,853	10,682	2,924	598	200	3,112	11,043	40,380
RUSSELL:													
Casselman	37	175	229	24	28	285	870	338	43	55	366	652	5,300
Clarence	92	75	.....	47	26	288	552	252	.....	50	264	612	1,100
Russell	225	100	459	75	93	1,088	2,843	958	740	104	1,008	2,880	3,000
SIMCOE:													
Alliston	177	.....	10	70	60	.....	697	323	.....	45	373	691	.....
Barrie	476	500	403	125	58	1,707	4,128	1,512	730	210	1,642	3,996	.....
Beeton	153	40	278	68	43	348	1,422	455	304	109	471	1,426	2,550
Bradford and W. Gwillimbury	204	100	91	82	74	831	1,955	737	237	79	775	2,165	6,500
Coldwater	169	100	227	65	20	893	1,745	637	250	60	668	1,603	2,575
Cookstown	202	125	100	109	25	405	1,266	545	220	70	577	1,248	1,330
East Simcoe	272	450	364	80	97	987	2,529	779	209	206	802	2,049	1,060
Flos Tp	207	175	244	75	65	1,155	2,814	702	674	150	749	2,549	4,925
Nottawasaga & Great Northern	293	300	246	86	79	2,900	4,411	1,119	568	250	1,223	3,851	1,600
Oro	201	50	348	97	84	432	1,508	462	222	79	483	1,790	1,125
Tiny and Tay	227	200	41	86	164	1,025	2,081	973	569	155	1,157	3,180	1,500
STORMONT:													
Cornwall	346	125	254	160	339	4,189	6,836	1,431	1,676	250	1,473	6,125	3,650
Finch	77	50	113	38	47	167	614	222	10	25	235	540	400
Roxborough	266	100	.....	65	93	720	2,444	870	65	37	914	2,905	4,500
Stormont	158	50	231	.....	106	489	1,202	632	10	22	651	921	500

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SUDBURY:													
Chelmsford	292	175	225	54	32	239	1,401	357	284	.....	378	1,103	1,010
Maitland and Cosby	152	.....	12	36	11	.....	239	169	5	15	175	210	150
Massey	363	.....	.....	64	56	247	789	423	.....	106	465	815	2,950
Warren	363	25	.....	36	18	88	993	467	72	50	522	949	1,700
TIMISAKAMING:													
Charlton	345	45	23	60	24	114	914	292	30	79	419	805	1,985
Cochrane	260	.....	296	45	44	170	987	260	.....	100	391	1,470	1,575
Englehart	465	25	96	57	26	121	1,215	466	14	79	597	1,179	3,295
Matheson	(No re	turns).											
New Liskeard	560	100	20	68	40	462	2,099	648	65	102	725	1,545	.....
Porquis Jct	88	.....	20	16	72	29	516	90	.....	.....	92	204	.....
THUNDER BAY:													
Oliver	469	50	157	100	38	1,002	3,307	612	313	129	688	2,793	5,200
Ware Tp	46	.....	35	.....	46	16	314	113	17	.....	113	271	.....
West Algoma	900	.....	275	213	348	3,490	8,621	1,489	2,231	530	1,763	8,612	43,172
Whitefish Valley	202	67	122	172	40	65	806	252	14	55	310	857	300
VICTORIA:													
Eldon	122	130	100	.....	75	194	940	297	187	45	391	872	.....
Fenelon	169	135	154	51	15	161	764	498	.....	25	557	752	.....
Mariposa	98	100	.....	40	49	137	539	302	62	41	318	681	.....
South Victoria	800	1,200	899	293	141	7,099	12,969	2,843	3,014	355	2,871	13,008	23,925
Verulam	351	100	145	87	47	221	1,788	674	70	53	742	1,857	6,900
WATERLOO:													
Elmira and Woolwich	176	425	224	77	33	1,277	2,587	553	440	75	567	2,291	4,500
South Waterloo	545	850	342	.....	.. 300	681	3,477	1,591	96	202	1,657	3,259	1,300
Wellesley and N. Easthope	238	510	73	74	99	325	1,749	832	321	75	840	1,775	2,500
Wilmot	350	530	376	96	41	927	2,791	1,439	40	131	1,516	2,734	500

WELLAND:													
Bertie	129	75	91	22	132	291	1,251	254	286	50	366	1,095	.....
Fenwick	315	505	72	62	83	1,342	3,354	821	960	100	912	3,996	9,200
Thorold Town and Tp.	209	1,231	388	47	63	1,501	4,205	525	798	135	620	2,969	12,300
Welland	485	799	781	80	440	4,001	8,898	1,452	1,899	177	1,484	6,955	27,100
WELLINGTON:													
Arthur	259	65	67	121	47	494	1,991	702	522	130	821	2,313	2,500
Centre Wellington	359	180	276	106	135	794	2,598	898	158	131	1,000	2,532	1,025
Erin	284	75	152	130	131	1,437	2,881	719	198	125	792	2,114	2,400
Mount Forest	330	60	134	168	108	525	2,185	845	197	81	992	1,689	2,800
Palmerston	144	15	169	54	39	326	986	424	90	45	430	815	3,040
Peel and Drayton	178	75	205	56	17	407	1,259	518	182	74	520	1,157	2,000
Puslinch	167	50	.....	60	502	207	1,148	399	55	103	451	1,177	200
Rockwood	254	100	440	77	92	430	1,817	877	75	64	946	1,845	3,100
West Wellington	164	75	158	67	79	265	1,292	602	188	60	627	1,231	1,690
WENTWORTH:													
Ancaster	250	300	266	46	154	668	2,050	630	389	140	724	1,966	4,350
Binbrook	149	275	175	84	196	362	2,041	548	379	.....	624	2,515	4,200
Hamilton and Wentworth	(No	Fair).											
Rockton	342	150	268	.....	250	1,316	3,314	1,108	274	129	1,109	2,940	.....
Waterdown	192	200	133	5	52	108	920	519	115	50	564	1,212	.....
West Flamboro	153	175	211	51	60	364	1,312	418	82	87	445	1,254	127
YORK:													
Markham and E. York	645	350	871	116	77	3,286	7,442	1,693	1,066	150	1,761	6,101	25,100
Newmarket	454	100	752	110	93	1,676	4,208	1,419	1,143	175	1,419	4,290	15,550
Queensville	120	75	196	47	86	98	667	341	6	35	341	551	.....
Richmond Hill	262	85	199	52	58	978	2,215	711	216	104	765	1,827	4,276
Scarboro	342	100	1,033	98	51	427	2,884	927	30	125	1,004	3,239	5,984
Schomberg	217	85	315	75	32	651	1,809	831	330	80	833	1,590	3,500
Sutton	169	140	425	61	80	264	1,752	715	482	60	756	1,805	2,400
Weston, York, and Etobicoke	276	650	450	71	125	1,444	4,372	1,187	675	208	1,203	4,372	1,800
Woodbridge	594	400	462	101	67	3,081	6,086	2,428	100	235	2,557	8,487	16,200
INDIAN SOCIETIES:													
Garden River	50	.....	.....	27	17	28	341	175	6	10	175	289	.....
Sarnia Reserve	50	.....	.....	30	16	220	512	168	205	25	168	537	.....
Six Nations	100	.....	.....	51	177	247	1,141	284	149	106	308	1,197	3,290
United Indian	100	150	52	50	14	147	703	275	183	26	302	769	.....
Totals	86,242	73,030	58,388	22,207	32,801	251,574	752,410	226,814	113,195	31,490	240,147	754,332	1,235303

Ontario Department of Agriculture

APPENDIX

TO

ANNUAL REPORT

OF THE

Agricultural Societies

1921

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS AND PRIZE-WINNING GRAIN AT WINTER FAIRS

THE CANADIAN NATIONAL AND CENTRAL CANADA EXHIBITIONS

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:

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1922

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APPENDIX

TO

REPORT OF AGRICULTURAL SOCIETIES

For fifteen years Standing Field Crop Competitions have been successfully conducted by the Ontario Department of Agriculture, and in each of the years that have passed improvements have been made in the Rules and Regulations governing same, and the result has been that Ontario stands first of all the Provinces in this highly educational work, which has brought large financial returns to those participating therein.

A new departure was inaugurated in 1921, when the Department of Agriculture, in conjunction with the Seed Branch of the Dominion Government, arranged for Combined Standing Field Crop and Threshed Grain Competitions, with a view to increasing the supply of pure seed grain in Ontario of such high quality as to be suitable for registration.

The prizes offered to each Society entering this Competition totalled $275, towards which the Society's contribution was $25. The prizes were divided as follows: First, $75; Second, $60; Third, $45; Fourth, $35; Fifth, $30; Sixth, $20; Seventh, $10.

In this competition, every one in a Society entering had to sow the same kind of registered grain or potatoes and the same variety. The acreage was the same as in the Regular Competitions. Societies had the option of entering in either the Regular, or the Combined, or in both, but if entry was made in both, the crops must not be the same, and no Society could hold more than two competitions. A minimum of fifteen competitors in a Society was required for the Combined, and no one was allowed to make entry in more than one Society.

The Standing Crops were judged when ripe, and the threshed grain from the same was judged in the bins or sacks of the competitors before January 15th, 1922. The combined scores determined the awards in the proportion of sixty % for the crop in the field and forty % for that threshed and in the bins.

The following is the minimum quantity of grain, seeds and potatoes that competitors were required to have in their granaries to be tested and scored by the judges: Oats, 100 bushels; Wheat, 75 bushels; Barley, 75 bushels; Peas, 50 bushels; F. Beans, 25 bushels; Clover and Timothy, 10 bushels; Buckwheat, 50 bushels; Corn, 50 bushels; Potatoes, 100 bushels.

The following are the registered varieties from which selections had to be made:

Spring Wheat.—Marquis, Red Fife, Huron.
Oats.—Banner, O.A.C. No. 72, Victory, Gold Rain, O.A.C. No. 3.
Barley.—O.A.C. No. 21, Mandscheuri.
Peas.—Arthur, Golden Vine, Canadian Beauty.
Corn (*Dent*).—Wisconsin No. 7, Golden Glow, Bailey.
Corn (*Flint*),—North Dakota, Longfellow, Quebec Yellow, Quebec 28.
Potatoes.—Green Mountain, Dooley, Carman No. 1, Irish Cobbler, Early Ohio, Gold Coin.

Thirty-six Societies entered the Combined Competition, all but six selecting oats.

The Ontario Department of Agriculture supplied the judges for the crops in the field, except potatoes, and the Seed Branch, Ottawa, attended to the threshed grain and potatoes, assisted in the latter by the Ontario Vegetable Specialist.

In the Regular Competitions, one hundred and fifty-six Societies entered in Oats, nine in Spring and thirteen in Fall Wheat, six in Barley, two in Peas, fifty-one in Potatoes, forty-four in Corn, six in Turnips and two in Mangels.

Many more Societies would have taken part in the 1921 Competitions had it not been for the continued drought, which affected the crops so adversely in many sections of the Province.

J. Lockie Wilson, *Superintendent.*

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
ALGOMA		[20]	[25]	[10]	[20]	[25]	[100]	
Bruce Mines Agr. Society.								
Judge—Jas. McLean, Richmond Hill.								
H. Skusky, Bruce Mines, R.R. 2	O. A. C. 72	16	24	7	19	18½	84½	
Wm. T. Vaughan, do R.R. 1	Tartar King	14½	22½	7½	18¾	18½	79½	*a*
Fred Hopper, do R.R. 1	Banner	12½	25	5½	18¾	17	78½	
Jos. Rogers, Jr., do R.R. 1	O. A. C. 72	14½	23	6½	17½	16½	78	
N. S. Pace, R.R. 1	Banner	12½	24	5	19	16	76½	15
Robt. Carter, Portlock	Am. Banner	14½	23	5½	16	17	76	
R. S. McEwan, Bruce Mines, R.R .1	Tartar King	13½	22	6	17	17½	74*a*	
R. J. Coleman, do	O. A. C. 72	13½	17	6	18	16½	71	15
Central Algoma Agr. Society.								
Judge—Jno. C. Shaw, Norwich.								
W. J. Conway S. Marie, R.R. 1		18	22	8½	20	27½	89*a*	
Geo. Farmer,, do R.R. 2		17	20	7	19	16	77*a*	
Percy Lethbridge, do R.R. 2		16	20	7	17	26	74*a*	
T. W. Farmer, do R.R. 2		11½	18	7	17	13	64½	*a*
J. Knight, do R.R. 1		15½	15	7	12½	15	63*a*	
H. Knight, Jr., do R.R. 1		12	15	5	12	13	55*a*	
H. Penno, do R.R. 2		13	12	6	12	11	52*a*	
North Shore Agr. Society.								
Judge.—Jno. C. Shaw, Norwich.								
H. S. Chappell, Bar River	Great Leader	17	25	8	18	22	88*a*	
E. V. Evoy, do	Northland	17½	22	8	18	22	85½	*a*
R. L. Evoy, do	O. A. C. No. 3	16	22	7	18	20½	83½	
Percy Evoy, do	Northland	15	20	8	18½	21½	81*a*	
Carson Moore, McLennan	Golden Coin	13	20	7	15	17	70*a*	
A. L. Tuckett, Echo Bay	Imp. Ligowa	13	12	5	15	20	63*a*	
Wm. Barkley, Bar River	Northland	13	20	5	12	13	61*a*	

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth, method of seeding and absence of lodging.

†Yield and quality of grain—Considering proportion of well-filled heads of plump grain of good quality and uniformity of maturity.

‡See key page.

a Points deducted for non-standard variety.

Note.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
ALGOMA.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
ST. JOSEPH ISLAND AGR. SOCIETY. *Judge—Jas. McLean, Richmond Hill.*								
Wm. Hadden, Richards Landing	O. A. C. 72	13½	25	6	18	18	80½	
Mrs. A. W. Ross, do	Reg. Banner	12	24	6	20	17½	79½	
Arthur Hadden, do	O. A. C. 72	12½	25	6	18	17½	79	
Bert Harrison, do	Granary Filler	12	22	5½	19	17	75½	
Guy Rains, Sea Gull	Banner	12½	22	6½	15½	17	73½	
W. R. Lay, Richards Landing	Banner	11½	24	5½	17	15	73	
H. Underhill, do	do	11½	22	6	19	14	72½	15
Thos. White, do	Mammoth Cluster	11½	24	5	18	13	71½	
THESSALON AGR. SOCIETY. *Judge—Jas. McLean, Richmond Hill.*								
J. R. McLennan, Thessalon, R.R. 2	McLennanFavorite	13½	25	6	20	18	80½	*a*
J. H. Hopper, do R.R. 1	Granary Filler	13½	24	6	20	13	76½	
N. King, do R.R. 1	O. A. C. 72	14	25	5	18	14	76	
J. Broughton, Livingstone Creek	Irish	13½	24	6	15	16	72½	*a*
Proud Bros., Bruce Mines	Granary Filler	11½	25	5½	16	14	72	
BRANT.								
ONONDAGA AGR. SOCIETY *Judge—Jas. A. Cameron, Weston.*								
R. J. Robertson, Cainsville, R.R 1	O. A. C. 72	17	24	9	19	22	91	
Geo. E. Wood, do R.R. 1	Banner	17	24	9	18	21½	89½	15
Geo. Thomson, do R.R. 1	do	16	24	9	18½	21½	89	
A. W. Pate, Paris, R.R. 4	do	16	23½	9	18	22	88½	15
D. B. Campbell, Cainsville, R.R. 2	do	16	23	9	18	22	88	
A. W. Vansickle, Onondaga	O. A. C. 72	16	23	8	18	22½	87½	15
M. N. Simpson, Cainsville, R.R. 1	do	16	22	8½	18	22	86½	15
H. H. Howell, do R.R. 1	do	15½	23	7½	18	21	85	15
Jas. Simpson, do R.R. 1	do	15	21	8	18	21	83	15
W. A. Douglas, Middleport	Banner	15½	21	8	18	20	82½	10
A. W. Hamilton, Cainsville, R.R. 2	O. A. C. 72	15	22	8	17	20	82	15
Hy. Preiss, Middleport, R.R. 1	Banner	14½	22	8	16	21	81½	14
BRUCE.								
ARRAN AND TARA AGR. SOCIETY *Judge—Wm. Hudd, Shelburne.*								
Geo. F. Kennedy, Tara	Banner	16	23	7	20	20	86	15
Robt. J. Coleman, do	do	14⅔	19	7	19	23	82⅔	15
Geo. Neil, do	do	12½	17	7	18	21	75½	15,14
Geo. Dolphin, do	do	13	14	7	19	22	75	14,15
Frank Sims, do	od	12½	15	6	18	22	73½	15,14,13
Austin Legge, do	do	12	15	8	15	22	72	15,14
Jas. F. Young, do	do	11⅓	17	6	17	20	71½	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
CARRICK AGR. SOCIETY. *Judge—Arch. Greer, Mansfield.*								
J. L. Tolton, Walkerton, R.R. 3	Banner	14	23	9	19	23	88	1,15
W. A. Tolton, Walkerton,	do	16½	22	9	18	21½	87	1,15
Andrew Schmidt, Mildmay, R.R.1	O. A. C. 72	16	22	8	18	20½	84½	15
B. Goetz, Mildmay	do	15	22	8	19	20	84	14
N. Durrer, Mildmay R.R. 1	Banner	13	24	7	18	19	81	
Geo. B. Armstrong, Teeswater, RR1	do	15½	21	8	16	20	80½	1,15,2
S. Schmidt, Formosa, R.R. 1	Abundance	16	18	9	18	19	80	1,15,2,14
H. Lints, Mildmay	O. A. C. 72	12	22	7	17	20	78	2,10,15
D. Borho, Formosa, R.R. 1	do	12	21	7	18	17½	75½	10,15
M. Weiler, Formosa	do	14	20	6	17	18	75	15,14,2
Wm. A. Rowand, Walkerton, R.R. 1	do	13	20	7	16	18	74	2
CHESLEY AGR. SOCIETY. *Judge—Arch. Greer, Mansfield.*								
Jas. Crerar, Chesley	Banner	16½	23	6	18	21	84½	12,15
H. Thompson, Dobbinton	O. A. C. 72	15½	20	7	17	20	79½	1,15
Robt. Sloan, Chesley	Banner	14	21	6	16	20	77	
Thos. Oswald, do	O. A. C. 72	14½	20	6	17	19	76½	1,15
Jno. Thompson, do	Monahan	14	21	7	16	20	76*a*	14
Jno. Oswald, do	O. A. C. 72	13½	21	6	16	19	75½	15
M. Thompson, do	Banner	12	21	6	18	18	75	
HEPWORTH AGR. SOCIETY. *Judge—Wm. Hudd, Shelburne.*								
W. H. Sharp, Shallow Lake	White Wave	15½	24	8	17½	24½	87½	*a*
Geo. Miller, Allenford	Imp. Banner	16	24	7	20	20	87	
C. A. Barfoot, Shallow Lake	White Wave	14½	24	9	17	24	86½	*a*
D. Schnurr, do	O. A. C. 72	16½	16	7	20	23	82½	14,15
Hugh Anderson, Hepworth	do	15	20	7	17	20	79	15,73
H. Hewitson, Owen Sound	Imp. Banner	14½	20	7	16	21	78½	15
C. Walker, Hepworth	O. A. C. 72	14	20	8½	17	18½	78	15
C. A. Millard, do	do	14½	18	8	17	20	77½	15
J. Eldridge, do	do	15	16	7	18	21	77	15
H. Wilson, do	do	13½	18	7½	16	21½	76½	15
Alf. Forbes, do	do	11	22	6	15	21	75	
LUCKNOW AGR. SOCIETY. *Judge—Jas. H. McKee, Shelburne, R.R. 4.*								
Wm. Webster, Lucknow	O. A. C. 72	18	23½	9	19½	23	93	
Douglas, Graham, Lucknow, R.R. 5	do	17½	23	9	20	21	90½	15
K. R. McKenzie, do R.R. 5	do	18	22	9	19½	21½	90	15
Jos. Taylor, do R.R. 2	do	16	23	7½	18	21	85½	15
W. A. Wilson, do	do	15	22	7	19½	20½	84	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
LUCKNOW AGR. SOCIETY—*Con.*								
J. Forster, Lucknow,, R.R. 1....	Danish.....	15½	20	8½	19½	22	83½	*a*15
W. Henderson, do R.R. 3....	O. A. C. 72.....	15½	21	9	18	19½	83	15
W. G. McKenzie, do R.R. 5....	do	15½	21	8	18	20	82½	14
Jno. McLeod, do R.R. 5....	do	18	13	9	20	21½	81½	1
Jno. Webster, do R.R. 2....	do	14	21	7½	18½	20	81	14,15
A. W. Alton, do R.R. 2....	Brit. Century.....	14½	23	8	15	20	78½	*a*15
M. McMillan, do R.R. 1....	Jewel.....	17	22	9	10	20½	76½	*a*
F. G. Todd, do R.R. 2....	Rennie's Early Yielder.....	15	21	8½	12	21	75½	*a*15
NORTH BRUCE AND SAUGEEN AGR. SOCIETY.								
Judge—J. A. Kernahan, Maxwell.								
Jno. Baker, Port Elgin.....	Green Mountain...	16½	24	9	20	20½	88	*a*
A. Lamont, do R.R. 2....	O. A. C. 72.....	15½	24	5	19	20	83½	
F. W. Elliott, do	$1,000.....	17½	20	7	18	20½	81	*a*1,15
Jos. Thede, do	O. A. C. 72.....	15½	20	6	15	20	76½	15
A. Thede, do	do	17	15	7	16	20½	75½	1
J. Anderson, Port Elgin.....	O. A. C. 72.....	14½	23	4	14	19½	75	14
J. Nicholson, North Bruce, R.R. 1	do	13½	18	8	16	18½	74	15,14
Shanks Bros., Port Elgin.....	Banner.....	16½	22	5	12	17½	73	
W. Bulger, do	O. A. C. 72.....	15½	10	8	18	20	71½	1,15
E. Riley, do	do	14½	22	6	15	14	71½	15
TEESWATER AGR. SOCIETY.								
Judge—Jas. H. McKee, Shelburne.								
J. D. Little, Teeswater.....	O. A. C. 72.....	18	24	9	19½	23½	94	
A. & W. McKague, do R.R. 1...	do	18	23½	8½	19½	22½	92	
T. B. Aitken, do R.R. 2...	do	17	22½	8½	19½	23	90½	15
A. McDonald, do R.R. 1...	do	16½	22	8½	19	22½	88½	15
D. Keith, do	do	16½	23	7½	19	21½	87½	
Wm. McKenzie, do R.R. 2...	do	16½	22	8½	19½	20½	87	15
W. G. Keith, do R.R. 2...	do	15	21	7½	19½	21	84	14,15
S. D. & A. Stobo, do R.R. 3...	do	14	20	8	15	21	78	15,14
J. S. Armstrong, Formosa, R.R. 1..	do	12½	20	7½	18½	19	77½	1,15
WIARTON AGR. SOCIETY.								
Judge—Arch. Greer, Mansfield.								
Wm. Lembke, Wiarton, R.R. 2....	O. A. C. 72.....	16	22	8	18	19½	83½	
E. J. Loney, Oxenden.....	Banner.....	16½	21	6	19	17½	80	1
A. R. Lembke, Wiarton, R.R. 2...	O. A. C. 72.....	14	22	7	18	18	79	
Bert Beacock, do R.R. 2...	do	13	20	6	18	16	73	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
CARLETON.		[20]	[25]	[10]	[20]	[25]	[100]	
FITZROY AGR. SOCIETY.								
Judge—M. J. Casselman, Morrisburg.								
E. O. Wilson, Kinburn	O. A. C. 72	18	24	9	19	22½	92½	4
E. H. Miller, Galetta	O. A. C.	18½	21	8½	19	23	90	
A. J. Halpenny, do	O. A. C. 72	16½	23	9	19	21½	89	10
J. A. Anderson, Kinburn	do	18½	20	9	19	21½	88	4
R. H. Smith, Galetta, R.R. 1	do	17½	23	8	19	19½	87	
F. R. Gourlay, Kinburn	do	17½	22	8½	17	21½	86½	
W. T. Smith, Galetta	do	17	23	8½	17	20½	86	15
F. Herrick, do	do	13	14½	8½	19	21½	76½	10
P. M. Herrick, do	do	16	16	8	16	19½	75½	10
METCALFE AGR. SOCIETY.								
Judge—Robt. McKay, Maxville.								
R. & J. Woods, Metcalfe	Am. Banner	17	24	8½	19	21½	90	
F. R. Stanley, do	O. A. C. 72	16	18	8	18	20	80	10
G. A. Latimer, do	Am. Banner	16	20	8	15	20½	79½	
T. B. Acres, Vernon	Imp. Banner	14¾	24	6	17	15	76½	
DUFFERIN.								
DUFFERIN AGR. SOCIETY.								
Judge—Alex. Morrison, Creemore,								
Jos. H. Jackson, Orangeville, R.R. 1	Banner	17	23	9	18	22	89	14
W. H. Hunter, do R.R. 2	Early Bonanza	17	22	9	18	22	86*a*	14
S. C. W. Hughson, do R.R. 2	Early Cluster	16	23	9	16	22	84*a*	
W. C. Watson, do	O. A. C. 72	16	20	8	17	21½	82½	10
W. H. Gillespie, do R.R. 3	do	15	20	9	18	20	82	2,10
B. C. Cook, do R.R. 6	do	13	20	8	18	21	80	2,15
Jno. A. Cornelius, Amaranth Sta.	Banner	13	20	8	18	20	79	2,15
Robt. Little, Camilla	do	13	20	7	18	20	78	2,15
J. J. Leighton, Orangeville, R.R. 1	do	14	19	7	17	20	77	10,15
Jas. Johnston, do R.R. 6	O. A. C. 72	14	20	6	17	19½	76½	2
N. Black, do R.R. 2	Banner	14	19	8	15	20	76	2,15
Jos. Carney, Amaranth Station	do	14	19	8	12	20	73	14,15
Geo. Lightle, do do	do	11	19	7	16	18	71	2

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
DUFFERIN.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
DUFFERIN CENTRAL AGR. SOCIETY.								
Judge—Alex. Morrison, Creemore.								
Arch. Greer, Mansfield, R.R. 1	Banner	15	23	8	18	20	84	15
Rice Hill, Shelburne, R.R. 4	do	16	22	7	18	20½	83½	15
Geo. E. Foster, Honeywood, R.R. 1	O. A. C. 72	15	21	8	18	21	83	10
W. J. Davison, Shelburne, R.R. 4	Banner	14	21	7	18	21	81	15
Geo. Best, do R.R. 2	do	14	19	8	18	21	80	15,1
Wm. G. Noble, do R.R. 3	New Century	13½	19	8	19	21	78½	*a*2
Robt. J. Hall, do R.R. 2	Lincoln	13	20	7	17	21	76*a*	15
A. Ferris, do R.R. 2	do	12½	19	7	18	20	74½	*a*15
J. S. Richardson, do R.R. 1	White Wave	13½	19	7½	16	20	74*a*	2
Jas. H. McKee, do R.R. 4	O. A. C. 72	12	18	7	17	19	73	15,10
W. J. Hamilton, do R.R. 5	Banner	12	18	7	16	19	72	2
E. Hill, do R.R. 4	do	12	16	6	19	18½	71½	2,1
Alex. McFarlane, Jessopville	White Wave	12	18	6	17	19	70*a*	
DUNDAS								
MOUNTAIN AGR. SOCIETY.								
Judge—E. K. Hampson, Kemptville.								
W. G. Farrell, Winchester, R.R. 3	Banner	19	22	8½	19	22	90½	2
R. K. Graham, S. Mountain	Gold Rain	16¾	23	8½	19	19½	84¼	*a*15
Wm. G. Timmins, Inkerman	White Wave	18½	20	8½	16	21½	82¼	*a* 2,4
Robt. Mulholland, S .Mountain	O. A. C. 72	16	23	7	16	19	81	15
Wm. Cleland, do	do	15¼	23	7	14	21¼	80½	15
P. Scott, do	Banner	15	19	8	17	19	78	15
S. D. Thorpe. do	do	14½	19	9	15	20	77½	15,2
J. A. Wood, Winchester, R.R. 3	do	14¾	19	7	18	17½	76¼	2
W. J. Flegg, Brinston	do	14½	17	7	17½	17½	73½	10
DURHAM								
CARTWRIGHT AGR. SOCIETY								
Judge—Milton W. Young, Woodrous.								
N. H. Marlow, Burketon	O. A. C. 72	18	24	9	17	22½	90½	
J. G. Marlow, Blackstock	do	16½	24	8½	19	22	90	15
L. E. Mountjoy, Burketon	Irish	16½	22	8	19½	22	86*a*	15
R. Nesbitt, Nestleton Sta	O. A. C. 72	17	18	8	18	21	82	15
Geo. Nesbitt, do	do	16½	18	8	18	21	81½	15
Geo. M. Marlow, do	do	16½	20	9	15	20½	81	4
W. C. Ferguson, Blackstock	do	18	12	9	19	22½	80½	1,15
Sam'l McLaughlin, Nestleton	Mammoth Cluster	14½	20	8½	15½	21½	80	15
J. A. Johnston, Burketon Stn	O. A. C. 72	14½	17	8	19	20	78½	15, 11
S. Malcolm, Nestleton Stn	do	15	16	9	16	22½	78½	15
F. Taylor, do	Prince Royal	14	20	8	19	19	78*a*	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
ELGIN		[20]	[25]	[10]	[20]	[25]	[100]	
WEST ELGIN AGR. SOCIETY *Judge—R. H. Harding, Thorndale*								
W. S. Pearce, Wallacetown	Imp. Banner	12½	23	7	20	19½	82	
J. A. Page, do	O. A. C. 72	13½	20	7	20	21	81½	
J. E. Pearce, do	do	13	23	6	19	19	80	
A. D. McKillop, do	do	13½	22	6	19	18½	79	
Geo. Cumming, do	do	12	19	6	20	21	78	
M. McNabb, Iona Stn	Rennie's E. Yielder	14	21	6	20	18	77*a*	
S. L. Pearce, Wallacetown	O. A. C. 72	14	20	5	18	19½	76½	
H. Drumgole, do	do	13	17	6	19	19½	74½	
W. H. McAllister, Dutton	do	13½	17	5	19	18½	73	
E. H. Pearce, Wallacetown	do	12½	20	7	14	19	72½	
E. V. Docker, do	Granary Filler	12	18	7	15	20	72	
Arch. Lunn, do	do	13	22	5	15	16½	71½	
Harry Garbutt, do	O. A. C. 72	14	20	6	12	18½	70½	
ESSEX								
AMHERSTBURG AGR. SOCIETY *Judge— E.J. Mullins, Woodslee*								
Thos. Deslippe, Amherstburg	O. A. C. 72	20	24	9	19	23	95	
F. Pigeon, do	do	19	25	8	19	23	94	
W. A. Bailey, do	do	19½	24	8	19	22½	93	
Fred Pettypiece, do	do	18	24	8	17	22	89	
E. J. Langlois, do	do	17	24	7	18	21	87	
Ed. Deslippe, do	do	16	22	8	18	21	85	
Ed. A. Deneau, N. Malden	do	16	21	8	17½	22	84½	
R. Langlois, do	do	17	20	8	18	21	84	
W. C. Anderson, Amherstburg	do	18	17	9	19	21	84	
M. Deneau, N. Malden	do	15	22	8	18	19	82	
Jas. Martin, Amherstburg	do	16	22	7	18	19	82	
FRONTENAC								
KINGSTON IND. AGR. SOCIETY *Judge—F. A. Comerford, Eldorado*								
J. D. Morris, Portsmouth	O. A. C. 72	18	23	9½	20	20½	91	15
D. C. Rogers, Kingston, R.R. 1	do	17½	22	9	20	20½	89	15, 14
A. E. Weller, do R.R. 5	do	18	24	7	18	21	88	15
Ed. Hunter, Kingston Mills	Banner	16	22	9	15	23½	85½	15
Jas. Henderson, Portsmouth	do	16½	20	9	20	18½	84	10,15
E. Braddon, Kingston, R.R. 1	O. A. C. 72	15	22	9½	18	19	83½	15,10
Thos. Doyle, do do	Banner	16	20	9	19	18½	82½	4
M. J. Fowler, do do	O. A. C. 72	14½	19	10	19	18½	81	10
J. L. F. Sproule, West Brook	do	17½	22	7	15	19	80½	10,14
Jas. B. Baxter, Kingston, R.R. 1	do	14	21	9½	18	17½	80	
A. C. Day, Portsmouth	Reg. Banner	16	18	7	18	20½	79½	4,15,10,14
C. A. Kincaid, Kingston, R.R. 1	O. A. C. 72	14½	18	9	19	18½	79	15,10
A. E. Franklin, Kingston Mills	do	15	18	9	18	17½	77½	
W. A. Gordon, Kingston, R.R. 1	do	15½	16	9	19	17½	77	10
Wm. Gordon, do do	Reg. Banner	16	15	9	17	17½	74½	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
FRONTENAC.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
WOLFE ISLAND AGR. SOCIETY								
Judge—F. A. Comerford, Eldorado.								
H. McCready, Wolfe Island, R.R. 2	Banner	18	24	9½	19	19½	90	15
Jno. W. Keyes, do R.R. 2	O. A. C. 72	17	24	9	20	19½	89½	15
Wm. Allum, do R.R. 4	do	16½	24	9	20	19	88½	15
O. McCready, do R.R. 2	Banner	16½	24	9	19	19½	88	
J. Greenwood, do R.R. 3	do	15½	24	8½	20	19½	87½	
Ace Hough, do R.R. .	O. A. C. 72	15½	24	8	20	18½	86	
Geo. Boyd, do R.R. 2	Banner	16	23	9	18	18½	84½	10
Jas. Grant, do R.R. 2	do	14½	24	9	19	17½	84	
M. L. Wiggins, do R.R. 2	do	15	23	9	17	18½	82½	15,10
Jno. Hall, do	O. A. C. 72	16½	20	8	18	19½	82	15,10
W. J. Hall, Jr., do R.R. 2	Banner	15½	23	7	17	18½	81	
Jos. McLaughlin, do do	do	15	23	8	17	17	80	
W. E. Horne, do R.R. 3	do	14	20	8	18	14½	74½	15,10
GLENGARRY								
KENYON AGR. SOCIETY								
Judge—Peter Wilson, Cobden								
Wm. T. Arkimbali, Dunvegan, ...	Banner	17	18	9	19	22	85	
Jas. Villneuve, Dunvegan, R.R. 2	do	17½	16	8	16	23½	81	4,15
A. J. McLeod, do	do	17	16	7½	18	22	80½	
D. A. McGregor, Moose Creek, R.R. 2	do	17⅓	16	8	16	22½	80	15
N. Campbell, Moose Creek, R.R. 2	Siberian Cluster	16	17	8	17¾	23	79¾	*a*
Dan. McLeod, Dunvegan	do	16½	15½	7½	18	22	79½	13
A. A. McLeod, do R.R. 1	Banner	17	15	8	17	22	79	4
Jas. Vallance, Maxville, R.R. 2	do	16	16	7½	17	22	78½	15
W. F. Campbell, do	do	18	14	8	17	21	78	4
Wm. E. McKillican do	O. A. C. 72	16½	15	8	17	21	77½	10
F. K. McLeod, Dunvegan	Banner	15	15	8	17	21½	76½	4
Wm. Chisholm, do R.R. 1	do	15½	14	7	16	21½	74	4
Chas. Blaney, Maxville.....	do	15	12	8	15	21	71	4,17,15,13
ST. LAWRENCE VALLEY AGR. SOC.								
Judge—Peter Wilson, Cobden								
J. J. Dingwall, Williamstown.....	Banner	17½	22	9	17	22½	88	
A. A. McLennan, Lancaster.....	O. A. C. 72	18½	15	9	18	22½	83	4,2
W. J. Clark, do	Banner	16	16	8½	19	22	81½	2
S. Snider, Bainsville.....	do	17	15	9	19	21	81	4,2
H. A. Robertson, Martintown.....	do	18	15	9	14	24	80	
Wm. Robertson, do	do	17	18	8	14	22½	79½	13,4,2
Wm. Condie, Bainsville.....	do	17	14	7	19	21	78	2,10
J. D. MacLennan, Lancaster.....	do	15½	18	8½	16	19½	77½	2
Jno. H. McGillis, Summerstown...	do	17	15	9	14	21½	76½	2,10
Wm. Wightman, Lancaster.....	do	15	15	8	17	21	76	2,4
Wm. Mitchell & Son, Bainsville...	Siberian	16	16	8	16	21	75*a*	2
Jno. P. Snider, Bainsville.....	Banner	14½	13	8	17	21½	74	2,10
J. Munroe, Lancaster.....	do	16	12	8	18	19½	73½	2,15
D. Cresswell, Martintown.....	Siberian	15	14	7	19	20	73*a*	5
Wm. Harland, Williamstown.....	do	16½	12	7	16	21	70½*a*	5,10,2

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

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GREY		[20]	[25]	[10]	[20]	[25]	[100]	
EAST GREY AGR. SOCIETY								
Judge—J. C. H. Walsh, Port Hope								
Robt. Swanton, Flesherton	O. A. C. 72	16½	23	8½	19	21	87½	15,11
Chas. Huddy, Priceville, R.R. 3	do	17	23	8½	17	21	86½	15
J. W. Davis, Markdale R.R. 4	do	14½	24	8½	18½	20½	86	15
Wm. McLoughry, do	do	14½	23½	8½	19	20	85½	15,14
Alex. D. Irwin, Priceville, R.R. 3	do	16	24	8½	15	19½	83	15
L. A. Fisher, Flesherton	do	14	23	9	16	19½	81½	15
Robt. W. Chard, Proton, R.R. 3	do	14	22	8	16½	19½	80	15,14
Thos. J. Stinson, Proton	Banner	14	20	6	17½	18½	76	15,14
W. J. Stewart, Flesherton	O. A. C. 72	13½	19	6	17	18	73½	15,14
HOLLAND AGR. SOCIETY								
Judge—Alex. McKague, Teeswater								
Mac. Cameron, Owen Sound R.R. 4	O. A. C. 72	16	23	7	19	21	86	15
Jno. McKenzie, Chatsworth, R.R. 3	do	16½	22	7	19	21	85½	15
A. Kemp, do R.R. 4	do	16	24	7	18	20	85	15
Wm. J. Carson, do	Banner	15½	23	8	18	20	84½	15
W. G. Milson, do R.R. 3	do	16	23	7	18	19½	83½	14
Jas. McDonald, do do	Imp. Banner	15	22	7	18	20	82	14
E. P. Hammill, do R.R. 4	Banner	16	15	8	17	20	16	1,2
KEPPEL AGR. SOCIETY								
Judge—R. H. Harding, Thorndale								
R. Ward, Kemble,	Granary Filler	15½	15	7½	16	20½	74½	2
L. B. Danard, do	Derby	15½	22	7	10	21½	74	*a*
Geo. McKenzie, do	O. A. C. 72	12	22	5	16	18½	73½	
L. Hurlbut, do R.R. 2	Derby	15	23	5	15	17	73	*a*
M. Bedell, do	do	14	23	5	14	18½	72½	*a*
Jno. McGregor, do	O. A. C. 72	12	23	6	14	16½	71½	
Jno. Taylor, do	Granary Filler	13	18	5	17	18	71	1
MARKDALE AGR. SOCIETY								
Judge—D. L. McClure, Brampton								
Edward Davis, Markdale, R.R.4	O.A. C.	17	19½	9	19	23½	88	
T. L. Mercer, do	O. A. C. 72	17	19½	8½	16½	24	85½	
Earl Davis, do R.R.4	do	17	18½	8	19	22½	85	
D. Foster, do do	do	14½	18	7½	19	22	81	
McLoughry Bros., do do	do	15½	18	8	18	21	80½	
W. R. Buchanan, Flesherton, R.R.2	do	18	11	8½	19	23	79½	1
E. Baker, Markdale, R.R.4	Banner	15	18½	6	19	20½	79	
Wm. Radcliffe, do do	O. A. C. 72	11	18	6	17	19	71	
Wm. Weber, do do	Banner	12	17	6	18	18	70	

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OATS.

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GREY.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
MEAFORD AND ST. VINCENT AGR. SOCIETY								
Judge—W. H. Davis, Ivy, R.R. 7								
Jas. Robertson, Rocklyn, R.R. 2	Yellow Russian	16½	20	9	18	23	86½	15
Wm. Pollock, Meaford, R.R. 2	do	16	21	8	18	21	84	15
Chas. A. Shields, do R.R. 1	Banner	15	17	8	15	19	74	15,2
W. A. Johnston, do	O. A. C. 72	15½	17	7	16	18	73½	15,2
Herb. Gilmore, do	Banner	15	18	7	14	19	73	15,14
Wm. Cramp, do	do	15	18	7	14	18	72	15,2
E. Martin, do R.R. 1	do	15	17	6	16	17	71	15
OSPREY AGR. SOCIETY								
Judge—D. L. McClure, Brampton								
E. Buckingham, Maxwell	Banner	15	23	8	19	22	87	
J. A. Kernahan, do	O. A. C. 72	15	18	6	19	22	80	
W. H. Hall, Singhampton, R.R. 1	Lincoln	14	18	7	17	20½	74½	*a*
R. J. Alisten, Feversham		12	17	7	17	20½	71½	*a*
Geo. McDonald, McIntyre	Granary Filler	14	16	4	16	21	71	
PROTON AGR. SOCIETY								
Judge—Jas. Boyd, Markham								
Robt. Kennell, Hopeville, R.R. 1	O. A. C. 72	14½	23	5	19	22	83½	14,15,2
R. Cronnin, Corbetton	Yellow Russian	14½	21	8	18	21	82½	11,15
Jno. Cronnin, Cedarville	do	16	18	8	19	21	82	2,14,15
J. W. Hannan, Dundalk,	Industrial	15	20	8	19	21	81*a*	2,15
R. N. Fowler & Sons, do	Yellow Russian	14	20	9	15	20½	78½	14,15,2
Geo. Bell, do R.R. 4	Banner	14	20	8½	16	19½	78	2,15
Chas. Gillies, do	Granary Filler	15½	20	6	15	20½	77	2,15
M. Lonsway, Corbetton	Sensation	15	19½	8	16	20	76¾*a*	2,15
Jno. Russell, Dundalk, R.R. 4	Yellow Russian	14	17	6	19	20	76	11,15,2
A. Clarke, do	$1,000	13½	22	8	15½	18½	75½*a*	2,15
Wm. Goodfellow, do	Sensation	14	20	7	16½	19	74½*a*	2,15
Loyd McQuarrie, do R.R. 2	Granary Filler	12	23	8	15	16	74	
E. Bell, do R.R. 4	Banner	13	18	8	16	19	74	2,15
Jno. McQuarrie, do R.R. 2	Banner	15	19½	7	15	17	73½	2,15,14
Jas. A. Fraser, do do	do	14	19	8	15	17	73	2,15
P. J. Fernanne, do do	do	13	20	6	16	17½	72½	2
John Rice, Conn, R.R. 2	Yellow Russian	14½	16	8	14½	19½	72½	2,15
S. Wiltshere, Dundalk, R.R. 1	O. A. C. 72	15	16	6	15	20	72	2,15
ROCKLYN AGR. SOCIETY								
Judge—W. H. Davis,, Ivy, R.R. 7								
Jno. Perry, Meaford, R.R. 4	Banner	16	16	7	17	21	77	1
Robt. Reid, Rocklyn, R.R. 2	Granary Filler	15	14	7	17	22	75	15,1,14
W. H. Sewell, Blantyre	O. A. C. 72	15	16½	7	16	19	73½	15,1
J. Yeadell, Rocklyn, R.R. 2	Banner	15	14	9	16	19	73	15,1
R. Storey, Meaford R.R. 4	do	15	16	7	16	18	72	15,10
M. Abercrombie, do do	do	15	18	6	14	18	71	15,14

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OATS.

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GREY.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
SOUTH GREY AGR. SOCIETY								
Judge—Robt. Medd, Sr., Auburn, R.R. 3								
M. Barber, Egremont	O. A. C. 72	15	22	8	20	23	88	2
Wm. J. Ritchie, Durham, R.R. 1	Banner	18½	15	8	20	25	86½	2,14
R. L. Edward, Markdale, R.R. 1	Mammoth Cluster	18	18	8	20	22	86	2
Wm. Weir, Durham, R.R. 1	O. A. C. 72	15	18	8	20	21½	82½	2
J. Park, Jr., Hanover, R.R. 1	Banner	16	20	8	18	20	82	
Alex. Grierson, do do	do	15	20	8	18	20	81	
Thos. H. Binnie, Priceville, R.R. 2	O. A. C. 72	15	15	8	14½	23	75½	15
Jno. McGirr, Durham, R.R. 4	do	10	25	0	20	20	75	
WALTER'S FALLS AGR. SOCIETY								
Judge—Alex. McKague, Teeswater								
Jno. Thom, Walter's Falls	Banner	15½	22	8	18	19	82½	15
Geo. I. Reid, Goring	do	16½	23	6	15	20	80½	14
Arch. Gillis, Bognor	do	12	23	7	18	17½	77½	
Geo. Morrison, Walter's Falls	do	16	17	7	16	20	76	10,15
C. W. Saunders, do	do	15	10	9	19	20½	73½	1,10
R. A. Hanna, do	do	16½	10	8	18	20	72½	1
HALDIMAND.								
SOUTHERN BRANCH AGR. SOCIETY.								
Judge—M. W. Sexsmith, Ridgeway.								
B. J. Booker, Fisherville, R.R. 2	Am. Banner	18	21	9	19	20	87	
N. Moerschfelder, do R.R. 2.	do	18½	24	8	16	20	86½	
G. A. Fitzgerald, Selkirk, R.R. 2	O. A. C. 72	18	20	9	18	20	85	2,14
A. Nagel, Fisherville, R.R. 2	do	16½	20	9	19	20	84½	
N. Hartwick, do R.R. 2	Am. Banner	18¼	20	9	19	18	84¼	15,10
Geo. Featherston, do R.R. 2	do	17¾	21	9	17	19	83¾	14
Wm. G. Beabion, Selkirk, R.R. 2	O. A. C. 72	17	20	8½	19	19	83½	15,14
E. Hunsinger, Fisherville, R.R. 2.	Am. Banner	17½	20	9½	17	19	83	
G. P. Fulsom, do R.R. 2.	O. A. C. 72	14¾	22	8	18	19	81¾	
J. Nagel, do R.R. 2.	Granary Filler	16¾	20	9	18	18	81¾	
Wm. Nagel, Selkirk, R.R. 2	Silver Mine	16	20	8	19	19	80*a*	
Walter Nagel, Fisherville, R.R. 2.	do	16½	20	9	17	19½	80*a*	
Bert Hoover, do R.R. 2.	Early Yielder	16	14	9	19	22½	78½	*a*
HALTON.								
HALTON AGR. SOCIETY.								
Judge—Geo. McKague, Woodville, R.R. 4.								
E. Harrop, Milton	O. A. C. 72	18	24	9	19	21	91	15
Jas. Widderburn, do	do	17½	24	9	19½	20½	90½	15
F. C. Willmott, do	do	16½	24½	9	19	20½	89½	
Geo. Agnew, do	Great Dane	18	24	9½	18	21½	89*a*	15
D. F. Ford, do	O. A. C. 72	17½	24½	9	17½	20	88½	14

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
HALTON.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
HALTON AGR. SOCIETY.—*Con.*								
Geo. E. Tastle, Milton, R.R. 2	Banner	16	23	9½	19	20½	88	
G. M. McNair, do	Mammoth Cluster	17	23½	7½	19	20½	87½	10
Cecil Melann, do	Prince Royal	17	24½	8	19	20½	87*a*	
A. D. McDuffer, do	Banner	18	23	8½	14	21½	85	15
Ed. Cooper, do	do	15½	24	9½	16	19½	84½	
Wm. M. Scott, do	O. A. C. 72	17	22	8	16	21	84	15
J. F. Ford, do	do	17½	17	9	19	20½	83	15,10,1
E. M. Readhead, do	do	15½	21	9	17	20	82½	14,15
Jas. H. Wilson, do	Banner	17	16	9	18	20	80	15,1
NELSON AND BURLINGTON AGR. SOCIETY. *Judge—D. J. Gibson, Bowmanville.*								
John Easton, Freeman	O. A. C. 72	18	24	9	19	23	93	15
M. T. Watson, Tansley	do	17½	24	9	20	22	92½	14
G. Breckon, Bronte	do	17½	20	10	19	23	89½	15,14,10
H. McCay, Freeman	Reg. Abundance	17	20	10	20	21½	88½	10,15
Jno. H. McCormick, Freeman	O. A. C. 72	17	23	9	16	23	88	15
F. E. Spence, do	do	16	21	8	19	23	87	10,15
Leslie Kerns, do	do	15	22	8	20	21	86	10
W. Lucas, do	Sensation	16	21	10	19	21	85*a*	15,10
W. E. Breckon, do	O. A. C. 72	14½	22	10	18	20	84½	14,10
A. Heslop, do	do	16	19	8	19	21	83	15,14,10
Jno. Pettit, do	do	15½	20	10	16	21	82½	10,15,14
C. N. Blanshard, do	do	16	20	9	17	20	82	10,15,14
Wm. Lucas, do	Sensation	16	18	10	19	20	81*a*	10,15
H. M. Pettit, Freeman	O. A. C. 72	14½	16	9	20	21	80½	10,15
O. McKerley, do	do	14	18	8	17	22	79	15
P. Cole, do	do	14½	15	10	18	21	78½	1
I. I. Devitt, do	do	14	21	8	16	18	77	15,14
Jno. Heatherington, Campbellville	Great Dane	14	19	7	15	20	73*a*	14,15
HASTINGS. BANCROFT AGR. SOCIETY. *Judge.—R. Greer, Morrisburg.*								
Wm. Price, Hybla, R.R. 1	Banner	18	23	9	19¼	24	93¼	15,10
A. Mountney, Bancroft	Mammoth Cluster	18	20	9½	20	22½	90	4,10
W. E. Kelusky, do	do do	15	24¾	7	20	22	88¾	15
D. Rutlidge, Hybla, R.R. 1	Yellow Russian	14¼	24	8	18	21½	85¾	
F. Kelusky, Bancroft	Banner	14	24	7	18¼	22¼	85½	10
C. W. Bierworth, do	do	14	24	8	17	22¼	85¼	15
J. L. Churcher, do	Early Yielder	16	23	8	20	19½	84½	*a*10,15
Wm. A. Gaebel, do	Banner	14	22	8	18	20	82	10,15
G. Frensky, do	Mammoth Cluster	14	24½	7	17	18½	81	
P. J. Green, L'Amable	Banner	14	22½	8	14	22	80½	1
Thos. Leach, Bancroft	do	14	24	8	15	18	79	5,10

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
HASTINGS.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
FRANKFORD AGR. SOCIETY. *Judge—E. H. Purdy, Port Perry.*								
Blake Cox, Frankford, R.R. 1	Rennie's E. Yielder	19	25	10	18	25	95*a*	
David Coon, do R.R. 2	Banner	19	22	8	20	25	94	
C. H. Ketcheson, Belleville, R.R. 2	Victory	19	22	9	20	25	93*a*	
Jas. Hinchcliffe, do R.R. 2	Banner	18	23	8	18	25	92	
Jno. Down, Trenton, R.R. 3	O. A. C. 72	18	25	8	20	20	91	
F. Charlesworth, Frankford	20th Century	20	15	10	18	25	86*a*	
L. Badgley, Belleville, R.R. 2	Sensation	16	18	8	20	23	83*a*	
Geo. Pollard, Jr., Frankford, R.R. 2	Banner	17	15	7	18	25	82	
G. Crowe, do R.R. 3	do	16	20	8	15	20	79	
S. M. Nicholson, Belleville, R.R. 2	Sheffield Standard	15	20	10	15	20	78*a*	
C. Perry, Frankford, R.R. 1	Abundance	15	20	8	15	20	78	14
Thos. Frost, Belleville, R.R. 2	Banner	17	15	8	18	17	75	
A. Wiley, Frankford, R.R. 7	Granary Filler	15	17	8	15	19	74	
MAYNOOTH AGR. SOCIETY. *Judge—R. Greer, Morrisburg.*								
Wm. S. Kelusky, Maynooth Sta.	Tartar King	18¼	24½	9	19½	23¼	92½	*a*
Sam'l. Robinson, do	do	18	24	9½	19½	23	92*a*	10
Walter Kelusky, do	do	17½	24	9	19¼	22¾	90½	*a*
W. Jos. McAlpine, do	Banner	16	24	9	18	22	89	10
H. Scott, do	Great Dane	16½	24	8	18½	23½	88½	*a*
E. Douglas, Greenview	Bumper King	17	24	9	19½	20	87½	*a*
J. H. Davis, do	Am. Banner	17	23	8	18	20	86	10
F. J. Cassidy, do	Bumper King	14	22	8	19	20	81*a*	
B. Davis, Maynooth Sta.	20th Century	15	22	8	17	19	79*a*	
Robt. Davis, do	Bumper King	14½	22	7	17	18	76½	*a*
WOLLASTON AGR. SOCIETY. *Judge—E. H. Purdy, Port Perry.*								
H. Moore, The Ridge	O. A. C.	18	20	10	18	25	91	
D. Maitland, do	O. A. C. 72	20	20	10	15	25	90	
Ed. Gunter, Coe Hill	Banner	15	23	10	18	23	89	
D. Henderson, The Ridge	O. A. C.	17	23	10	18	20	88	
Robt. Thompson, do	Banner	16	22	8	15	20	81	
H. Johnson, Coe Hill	do	16	20	10	12	20	78	
A. Danford, do	do	15	20	10	15	17	77	
E. Moore, The Ridge	O. A. C.	16	15	10	15	20	76	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
HURON.		[20]	[25]	[10]	[20]	[25]	[100]	
Blyth Agr. Society. *Judge—Robt. Berry, St. Mary's, R.R. 1.*								
D. Laidlaw, Walton, R.R. 3	Reg. Banner	18	21	8½	19	21½	88	15
J. & F. Laidlaw, do R.R. 3	do	17	25	6½	19½	19	87	
Jno. Barr, Blyth	Banner	17	23½	7½	15	19½	82½	
D. A. Laidlaw, Blyth	Reg. Banner	16	24	6	14½	19	79½	15
Medd, Bros., Auburn, R.R. 3	O. A. C. 72	18	19½	8½	12	20	78	15
R. Richmond, Blyth	Elmhurst	16	18	6	15	19½	72½	*a*
R. H. Shortreed, do	Banner	16½	16	7½	12	19	71	15
Gray Bros. do	do	14½	15½	6	15	19½	70½	15
R. Wightman, do	Bumper King	17	12	6	14½	22½	70*a*	14
East Huron Agr. Society. *Judge—H. L. Tisdale. Brampton.*								
R. J. Hoover, Brussels	O. A. C. 72	17½	22	8	18	21½	87	15
R. L. Taylor, do	do	17½	18	8	19	21	83½	14
W. R. Moses, Bluevale	Golden Gem	16	23	7	18	21	83*a*	15
Jno. G. Speir, Brussels	O. A. C. 72	17½	15	9	17	22	80½	14,15
R. H. Hoover, Walton	do	16½	15	8	18	22	79½	15
D. McKinnon, Brussels	do	16	22	6	15	20	79	14,15
H. Whitfield, do	do	15½	22	6	15	20	78½	15
O. Turnbull & Son do	do	17	12	9	20	20	78	15
Wm. Sholdice, do	Danish	16½	15	9	16	20½	75*a*	14,10,15
Geo. E. Speiran, do	O. A. C. 72	14½	15	6	19	18	72½	15,11
Howick Agr. Society. *Judge—H. L. Tisdale, Brampton.*								
Alex. McLaughlin, Gorrie, R.R. 1	O. A. C. 72	17½	24	7	20	20½	89	14,15
J. W. Gamble, Gorrie	Victory	17	22	7	19½	21½	85*a*	14,15
Jas. E. Ball, Wroxeter, R.R. 2	Banner	14	22	9	20	19	84	14,15
R. Wilkin, Palmerston, R.R.	O. A. C. 72	17½	17	6	19½	20	80	15
H. Sparling, Gorrie, R.R. 2	Swedish Select	14	21	6	18	19	76*a*	14,15
Jas. Downey, Fordwich	O. A. C. 72	15	16	6	19	19	75	14,15
A. Kiel, Gorrie, R.R. 2	Banner	14	15	7	18	20	74	15
Robt. F. Edgar, Gorrie, R.R. 2	do	14	15	6	19	19	73	14,15
Wm. Brown, Sr., do R.R. 1	do	14½	15	7	18	18	72½	14,15
Jno. Wiley, do	Swedish Select	16	15	5	17	20½	71½	*a*14
Jas. Johnston, do	do	16½	16	6	16	18½	71*a*	14,15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	Weeds in competitors' fields.
KENORA.		[20]	[25]	[10]	[20]	[25]	[100]	
DRYDEN AGR. SOCIETY.								
Judge—M. F. Cook, Dryden.								
Thos. H. Lewis, Oxdrift	Gold Rain	18	23	8	16½	23	86½ *a*	
A. J. Gardiner, Eagle River	do	18	23	6	15	19½	79½ *a*	
Jno. McKay, Dryden	do	17	22	6	17	18	78 *a*	
D. F. McKenzie, Eagle River	do	15	24	5	15	19	76 *a*	
Jas. Spalding, Oxdrift	do	18	18	8	13	19½	74½ *a*	
E. Neily, do	Leader	15	20	8	15	18	74 *a*	
Jas. M. Hutchinson, Dryden	Gold Rain	13	17	7	16	20	71 *a*	15
W. W. Howell, Oxdrift	do	16	18	8	13	17½	70½ *a*	
KENORA AGR. SOCIETY.								
Judge—W. F. Cook, Dryden.								
Geo. H. Alcock, Kenora, Box 167	Banner	18	20	7	17	21	83	1
A. R. Ascough, do	do	16	20	8	16	20	80	15
A. Ledegiere, do	Gold Rain	18	15	7	17	20	75 *a*	
J. E. Hinton, do	Banner	13	21	6	15	19	74	
Gould Bros., do	do	16	15	7	15	19½	72½	
Wm. McKreth, do	do	15	15	7	15	18½	70½	1
KENT.								
EAST KENT AGR. SOCIETY.								
Judge—Robt. Medd, Sr., Auburn, R.R. 3.								
W. Cameron, Thamesville, R.R. 4	Banner	17	25	9	20	22	93	14
Thos. Cameron, do	O. A. C. 72	18½	20	10	20	24	92½	15
Jno. Miller, do R.R. 4	do	19	20	10	20	23	92	
P. Cameron, do	do	19½	20	8	19	25	91½	12
Jno. Buchanan, Thamesville	O. A. C. 72	19	21	8	18	25	91	14
J. C. Harris, do R.R. 2	do	19	20	7	20	24	90	
Arch. Dick, do R.R. 4	do	17½	20	9	20	23	89½	
H. H. Buchanan, do	do	18	19	10	20	22	89	
R. J. Shankie, do R.R. 6	do	19	24	6	18	21	88	
Jas. Brisley, do R.R. 4	do	15	23	8	18½	23	87½	
P. Secord, do R.R....	do	17	20	8	20	22	87	14
Sam'l. Holmes, Northwood	do	15	20	8	18	25	86	
Robt. L. Barker, Thamesville	do	15	20	7	20	22	84	
Herb. Hetherington, do	Abundance	13	18	10	20	22	83	
D. Winters, Northwood, R.R. 3	Steves W. Cane	14	20	6	20	25	83 *a*	
Bert Street, Thamesville, R.R. 4	Banner	15	17	10	18	22	82	
S. Wardell, do	O. A. C. 72	14	18	8	17	23	80	
C. Baxter, do	Banner	20		10	20	25	75	

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OATS.

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KENT.—*Continued.*								
HOWARD AGR. SOCIETY.		[20]	[25]	[10]	[20]	[25]	[100]	
Judge—E. J. Mullins, Woodslee.								
Clarence West, Ridgetown	O. A. C. 72	16	22	9	20	21½	88½	
A. Catton, Northwood	Banner	16	22	9	20	20½	87½	
H. George, Ridgetown	do	16½	20	8	18	22	84½	
N. C. Campbell, do R.R. 2	do	16	22	8	20	18	84	
Wm. Cudmore, do R.R. 3	do	15	23	9	16	19	82	
W. R. McDonald, do R.R. 3		18	23	10	12	19½	80½	*a*
H. Wright, Northwood R.R. 3	Banner	15	21	7	17	20	80	
Edward Smith, Ridgetown, R.R. 3	do	16	21	7	17	18	79	
J. D. Brien, do		16	22	9	18	16	79	*a*
P. Gosnell, do		15½	20	8	15	18½	75	*a*
Geo. McDonald, do		15½	19	8	18	16	74½	*a*
J. H. Simpson, do R.R. 3		15	20	7	16	18	74	*a*
H. B. Harrison, do R.R. 3		16½	14	8	17	20	73½	*a*
Jno. McLaren, do	Banner	15	15	7	17	19	73	
ORFORD AGR. SOCIETY.								
Judge—B. R. Cohoe, Woodslee.								
Thos. Clark, Highgate, R.R. 2	O. A. C. 72	17½	23	9	19	20½	89	15
J. M. Gosnell, do R.R. 2	do	17	23	8	19	20½	87½	
Wm. Carnegie, Muirkirk, R.R. 1	do	16½	24	8	19	18½	86	
Jno. Snobelen, Highgate, R.R. 2	do	16½	23	8	18½	19½	85½	15
Wm. Gladstone, do R.R. 2	do	17½	21	9	17	20½	85	5,15
Jas. E. Gladstone, do R.R. 2	do	17	22	8½	17	19½	84	15,10,14
F. J. McLaren, do R.R. 1	do	18	22	8	15	20½	83½	15
W. W. Scott & Sons, do R.R. 2	do	16½	21	8	18	19½	83	
Robt. A. Newman, Muirkirk R.R. 2		17½	22	9	12	20½	79	*a* 15
Angus Thomson, do R.R. 3	O. A. C. 72	16½	17	8	18	19½	79	1 4,15
Jno. Stewart, Highgate, R.R. 2	do	16	19	8	16	19½	78½	15,14
D. McDonald, Muirkirk, R.R. 1		16½	18	8	18	19½	78	*a* 15,14
J. N. Gillies, Highgate, R.R. 2	O. A. C. 72	14	19	8	18	17½	76½	15,14,9
R. J. Newman, Muirkirk, R.R. 2		16	17	8	12	20½	71½	*a* 15
LAMBTON.								
EAST LAMBTON AGR. SOCIETY.								
Judge—Jas. Pullin, Woodstock, R.R. 1.								
A. W. Griffith, Watford	Banner	16½	23	8	16	21	84½	
E. A. Kidd, do	do	16	22	7	18	20½	83½	
W. S. Hare, do	O. A. C. 72	14	20	8	19	19	80	
E. H. Shirley, do R.R. 3	Silvermine	14½	18½	8	18½	19½	77	*a*
W. Annett & Sons, Watford	Banner	14½	20	6	16	19	75½	15
Leander Foster, do	O. A. C. 72	12	19	7	17	18	73	14
Jno. Zavity, Alvinston, R.R. 7	Banner	13½	19	6	19	14	71½	14

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OATS.

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LAMBTON.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
FLORENCE AGR. SOCIETY.								
Judge—Robt. Medd, Sr., Auburn, R.R. 3.								
Wm. J. Davis, Florence	O. A. C.	17	20	10	20	25	92	
W. J. Sinclair, Croton	do	17	25	10	15	24	91	
B. Currie, Florence	O. A. C. 72	17	22	9	20	22	90	
G. Butler, Croton	O. A. C.	15	25	10	18	21	89	
H. Paul, Florence,	do	19	25	10	10	24	88	
W. McFadden, do R.R. 3	do	20	23	8	15	21	87	
J. H. Powell, do	Imp. Ligowa	15	18	10	20	22	83*a*	
C. Bookin, Thamesville	O. A. C.	16	18	7	20	21	82	15,14
B. W. Fransher, Florence	do	13	20	7	18	23	81	15
Jas. Buchanan, Thamesville	do	14	18	10	20	18	80	15
S. Johnson, Croton	do	14	20	8	17	20	79	
Sterling Johnson, Florence	do	14	17	6	16	23	76	15
Jos. McClintock, do	Granary Filler	13	18	6	17	21	75	15
J. B. Coneybeare, Croton, R.R. 1	O. A. C.	14	16	7	10	25	72	15,14
C. Sharpe, Florence	Euphemia	13	10	10	18	23	72*a*	
PLYMPTON AND WYOMING AGR. SOCIETY.								
Judge—Robt. Berry, St. Marys, R.R. 1.								
C. F. Smith, Wyoming	Banner	19	19	9½	20	22½	90	15,1
Thos. Anderson, do	do	18½	21	9	18	22½	89	15
Fred Jardine, Camlachie	do	17½	20	8	18	20½	84	15,14
R. S. Jardine, do	Abundance	16½	21	8	14	21	80½	15
Wm. Simpson, do	Banner	16½	20	8½	15	20	80	15,14
Jas. Bryson, Wyoming	do	14	22½	6	17	19½	79	15
Joseph Bryson, do	do	13	20	6½	18	19½	77	15,14
M. Armstrong, Camlachie	do	15	22½	8	11	19½	76	14,15
A. P. MacFarlane, do	do	11½	22	6½	17	17½	74½	
M. Burnley do	do	14	22½	6	12	18	72½	15
E. Patton, do	O. A. C. 72	12	15	7	18	18	70	15
D. A. McKinley, do	Abundance	14	15	8	15	18	70	1
LEEDS.								
LANSDOWNE AGR. SOCIETY.								
Judge—S. E. Kidd, Burritt's Rapids.								
H. McD. Gray, Lansdowne	O. A. C. 72	17	24	9½	18½	23½	92½	14,12
W. B. Steacy, do	Banner	17½	24½	9	17	24	92	
Thos. J. Webster, do	do	17½	24	9	17½	23	91	4,12
J. H. Donevan, do	do	17½	22	9	18	23	89½	10,14
Wm. H. Rath, do	O. A. C. 72	16	23½	8½	19	22	89	14,12
R. N. Heaslip, do	Banner	18	21	9	18	22	88	4,6,12

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OATS.

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LEEDS—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
LANSDOWNE AGR. SOC.—*Con.*								
R. J. R. Breckenridge, Lansdowne.	O. A. C. 72	17¼	22	8½	18	22	87¾	4,12
D. B. Johnston, do ..	do	17	20	9	18½	23	87½	
Chas. Shortt, do ..	Banner	16	23	8½	18	21½	87	14,10,12
Thos. Steacy do ..	Abundance	16	23	9	17	21½	86½	14
A. W. Landon, do ..	Banner	16½	23	8	18	21	86½	4,10
W. Landon, do ..	Abundance	16½	20	8½	18	22½	85½	14
M. A. Kyes, do ..	do	17	21	8	17½	22	85½	
M. Steacy, do ..	Siberian	17	22	9	17	22½	85½	*a*10,14
Robt. Shields, do ..	Banner	15½	20	9	19	21	84½	4,14
Wm. Rotters, do ..	do	16	23	7½	16	21½	84	12
J. M. Ferguson, do ..	Granary Filler	16	20	9	16	21½	82½	4
LOMBARDY AGR. SOCIETY. *Judge—D. English, Burketon.*								
H. Chalmers, Smith Falls, R.R. 1..	Banner	15	18	8	18	21	80	10
R. Miller, Lombardy, R.R. 1...	do	15	20	7	18	19	79	14,15
A. Bissonette, do	do	14½	20	8	18	17½	78	
C. Patterson, do	do	14½	18	7	18	19	76½	
Jno. Duffield, do	do	14	20	6	18	18	76	10
E. J. O'Meara, do	do	14	18	8	18	16	74	10
E. W. Joynt do	White Wave	13½	22	8	15	17	73½	*a*15
M. Covell, do	Banner	12	20	8	15	18	73	15,14
E. C. Kelly, do R.R. 2.	do	12½	15	7	18	19	71½	10,15
LENNOX. LENNOX SOCIETY. *Judge—G. W. Davidson, Kemptville.*								
W. H. Hunter, Napanee	Banner	16	22	7	18	21	84	4,5
D. R. Sharp, do R.R. 2...	do	17	16	8½	19½	22½	83½	5
M. Hawley, do	Lincoln	14	24	8	18	21	83	*a*10,14
Geo. W. Price, Selby, R.R. 1.	O. A. C. 72	16½	22	8	16	20	82½	5,10,15
R. Parkes, Napanee	Sensation	16	22	7	17½	21	81½	*a*10,15,14
Cecil Luther, do	Banner	16	19	7	18	21	81	10,15
J. E. Robertson, do	do	15	23	6	16	19	79	10
Fred Jackson, Selby, R.R. 1.	O. A. C. 72	16½	15	7	18	21	77½	4,5
H. C. Empey, Napanee	do	15	19	6	16	21	77	15,14
F. K. Hill, Bath, R.R. 1	do	15	18	6	18	19	76	10,15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and in-sects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
LINCOLN.		[20]	[25]	[10]	[20]	[25]	[100]	
CLINTON AGR. SOCIETY.								
Judge—D. Smith, Smithdale.								
S. H. Culp, Vineland, R.R. 1	O. A. C. 72	17½	24½	9	20	20½	91½	
J. A. Lind, Beamsville, R.R. 1	do	17½	24	8½	19½	21½	91	10
D. H. Moyer, Vineland, R.R. 1	do	17	24	9½	19	21	90½	15,14
H. Tufford, Beamsville	do	17½	24	9	18	21½	90	15
A. W. Culp, do	do	16½	23½	9	20	20½	89½	15
W. S. Eborall, Beamsville, R.R. 1	do	17½	21	9	20	21½	89	15,14
Jno. A. Book, do	Banner	17½	23	8	19½	20½	88½	
Wm. Boughner, do R.R. 2	O. A. C. 72	17	23	8	19	20½	87½	15
Arthur Culp, do R.R. 1	Silver Mine	17½	22	9	19½	21	87	*a* 15
Wm. Librock, do R.R. 1	Siberian	17	21	8	20	21½	85½	*a* 15,10,14
Jas. Crown, do	O. A. C. 72	16½	19	9	19½	20	84	
A. E. Fieldmarshalldo	do	17	18	9	18	20	82	15
MONCK AGR. SOCIETY.								
Judge—D. Smith, Smithdale.								
A. Kennedy, St. Annes	O. A. C. 72	15	18	7	18	17	75	14
Jos. C. Hill, Wellandport, R.R. 3	Rennie's E. Yielder	15½	17	7	16	19	72½	*a*
J. E. Cosby, do R.R. 2	O. A. C. 72	14	18	7	16	17	72	15,14
S. Heaslip, do	Sensation	14½	20	6	16	16	70½	*a*
N. Shafley, do R.R. 1	O. A. C. 72	15	15	7	16	17	70	10
NIAGARA TOWN AND TP. AGR. SOCIETY.								
Judge—D. Smith, Smithdale.								
W. H. Sheppard, Niagara-on-the-Lake, R.R. 1	Granary Filler	16½	20	8	18	20	82½	
R. G. Dawson, do R.R. 1	O. A. C. 72	15½	20	7	18	18½	79	
J. D. Cooper, do R.R. 1	Imp. Banner	15½	20	8	17	18	78½	
J. J. Craise, do R.R. 1	Granary Filler	15	18	7	18	18	76	
N. Stevens, Virgil	O. A. C. 72	14	20	6	17	17	74	
R. L. Shaw, Niagara-on-the-Lake, R.R. 2	Granary Filler	13½	20	6	17	17	73½	
T. E. Hiscott, do R.R. 2	Banner	15	17	7	17	17	73	10
C. H. Bufton, do R.R. 1	do	14½	18	7	17	16	72½	10
A. Bufton, do R.R. 2	O. A. C. 72	15	17	6	17	17	72	
R. H. Field, Virgil	Granary Filler	14	18	6	16	17	71	10
E. P. Bradt, Niagara-on-the-Lake, R.R. 2	Banner	14½	16	7	18	15	70½	14,10
Jos. Copeland, do R.R. 2	Granary Filler	13½	18	7	16	16	70½	10
P. Lees, do	O. A. C. 72	14	17	6	16	17	70	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
MIDDLESEX		[20]	[25]	[10]	[20]	[25]	[100]	
CARADOC AGR. SOCIETY.								
Judge—W. F. B. Switzer, Streetsville.								
Alex. Lamont, Mt. Brydges, R.R. 2	O. A. C. 72	17	23	8	19	22	89	
D. Campbell, do R.R. 2	do	16	22	9	19	22	88	
N. Courtis, do R.R. 2	do	17	23	8	18	21½	87½	
Weld Bros., Delaware	do	17	22	8	19	21	87	
Jno. A. Crawford, Strathroy R.R. 1	do	17	20	9	19	21½	86½	15
D. A. McNeill, do R.R. 1	do	16	21	8	19	20½	84½	15
Jno. Walker, Mt Brydges, R.R. 2	do	15½	22	8	18	20½	84	
J. T. Crawford, Strathroy, R.R. 1	Banner	15½	20	8	18	19½	81	15,14
Clarence Troth, Mt. Brydges R.R.1	O. A. C. 72	14	21	7	19	20	81	14
N. McGugan, Strathroy, R.R. 1	do	17	10	8	19	21½	75½	15
EAST MIDDLESEX AGR. SOCIETY.								
Judge—G. A. Williams, Guelph.								
Wm. Hurston, Thorndale	Banner	18	23	9	18	22½	90½	
J. B. Nichols, Wilton Grove, R.R. 2	O. A. C. 72	18	22	9	18	21½	88½	
Andrew Cornish, do R.R. 1	Banner	16	23	9	19	20	87	
Jas. H. Wheaton, Thorndale	O. A. C. 72	16½	22	8	18	20½	85	
Chas. Guist, do	Banner	17	20	8½	15	22	82½	
J. W. Laidlaw, Wilton Grove, R.R. 2	do	13½	22	7	17	19½	79	
A. Beattie, do R.R. 1	Abundance	14	20	7½	16	19	76½	
G. A. Murray, do R.R. 1	Banner	16	10	9	18½	21½	75	
Geo. B. Laidlaw, do R.R. 1	do	17	20	6	10	21	74	
Geo. Riddle, do R.R. 1	do	15	10	8½	17	19½	70	
MOSA AND EKFRID AGR. SOCIETY.								
Judge—G. A. Williams, Guelph.								
A. B. McDonald, Glencoe	O. A. C. 72	18	23	9	18½	21½	90	
W. A. McCutcheon, do	do	17	22	8	20	21	88	
Chas. Gould, do R.R. 1	do	17	21	7	17	20	82	
Chas. Farris, do	do	14½	20	8½	19	19	81	
A. B. Gillies & Bros., do	do	14½	21	8	19	17	79½	
D. N. Munroe, do	do	14½	20	7	18	18½	78	
H. McCutcheon, do R.R. 1	do	11½	20	5	18	18	72½	
MUSKOKA.								
GRAVENHURST AND MUSKOKA AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon.								
B. Leacock, Gravenhurst, Box 155	O. A. C. 72	16½	23	8½	19	21	88	
Geo. York, do	do	17½	22	8	19	20½	87	15
Miller Bros., do	do	16½	23	8	18	21	86½	14

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
MUSKOKA.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
GRAVENHURST AND MUSKOKA AGR. SOCIETY.—*Con.*								
Robt. G. Young, Gravenhurst	O. A. C. 72	18	20	8½	19	20½	86	4
O. E. Taylor, Reay	Abundance	16½	23	8½	17	20¾	85¾	
W. H. Tincombe, Gravenhurst	O. A. C. 72	16	22½	7	19	21	85½	14
Jesse White, do	do	16½	23	6	19	20½	85	
K. Leacock, do	do	16	21	8	19	20	84	15
S. Polmateer, do	do	16½	19	8	20	20	83½	10
Jos. Short, do	New Sterling	16½	22	8	18	19	81½	*a*15,14,10
H. Hammond, do	Abundance	16	20	7	18	20½	81½	10
H. B. S. Palmer, do	O. A. C. 72	14	20	9	19	19	81	4
Wm. White, do	Banner	15½	21	6	18	20	80½	15
D. Morrison, Reay	do	13½	20	8	19	19	79½	15
Wallace Ruttan, Gravenhurst	Rennie's E. Yielder	14½	20	9	19	18	78½	*a*10
W. W. Morrison, Reay	Imp. Banner	17	13	9	18	21½	78½	1,15
MEDORA AND WOOD AGR. SOCIETY. *Judge—W. Hickson, Bobcaygeon.*								
T. W. Knight, Brackenrig	O. A. C. 72	16½	23	8½	20	20	88	
Arch. Mitchell, Bardsville	do	16½	23	8½	19	20	87	9
L. Butler, Point Kaye	20th Century	17	24½	7	19	20½	86*a*	
T. W. Knight, Brackenrig	Imp. Scotch	17	24½	7	19	20	85½	*a*
R. C. Butler, Point Kaye	20th Century	18	20	8	20	20	84*a*	15
W. S. Mahon, Port Carling	Banner	17	20	7½	18	21	83½	15
Thos. Aitkins, do	O. A. C. 72	16	20	7	19	21	83	10
C. H. McCulley, do	Banner	14½	24	7	16	21	82½	
John Davidson, Brackenrig	O. A. C. 72	16½	20	7	19	18	80½	15
Chas. McDonald, Port Carling	20th Century	13½	22	7	20	20	80½	*a*
W. F. Chambers, Bardsville	O. A. C. 72	15	18	8	17	19	77	
G. Fraser, Port Carling	Imp. Scotch	14½	21	8	18	16	75½	*a*4
Hugh Foulkes, do	do	14	21	8	15	18	74*a*	15
NORTH MUSKOKA AGR. SOCIETY. *Judge—J. J. Virtue, Hampton.*								
John Pleace, Canal	O. A. C. 72	16	24	9	18	22	89	15
Wm. N. Sinclair, Huntsville	Am. Banner	15½	24	8	20	21	88½	
S. Martin, Ravenscliffe	Siberian	16	25	8	18½	21	86½	*a*
J. Turnbull, Canal	O. A. C. 72	16½	23	8	17	21½	86	
A. Brown, Sr., Huntsville	Banner	16	24	7	17	21	85	
F. A. Cockram, do	Siberian	14½	23	7	18	20	80½	*a*
Jos. E. May, do	do	16	20	9	17	20	80*a*	15
R. J. G. Hill, do	Am. Banner	10	22	9	18	20	79	10,15
W. Martin, do	Siberian	14	18	9	18	18	75*a*	11,4,10
G. B. Richards, do	do	14½	20	9	18	13½	73*a*	
E. W. Tipper, Ravenscliffe	Banner	13	22	7	15	14	71	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	Yield and quality of grain.	Totals of scores.	Weeds in competitors' fields.
MUSKOKA.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
SOUTH MUSKOKA AGR. SOCIETY.								
Judge—Wilson Black, Stroud.								
H. L. Goltz, Bardsville	O. A. C. 72	16	24	8	18	22	88	
Chas. H. Kaye, Bracebridge	do	15½	24	8	18½	21	87	
R. D. Riley, Milford Bay	do	15	24	9	20	17½	85½	
A. J. Goltz, Bardsville	do	16	23	8	17	21	85	
Campbell & Richards, Alport	do	15	23	7	18	21	84	10
H. E. Beaumont, Bracebridge	do	14½	24	7	18	19½	83	
P. C. Kaye, do	do	13	22	7	18	19	79	15
D. Yearley, Falkenburg	Banner	12½	20	7	19	18½	77	15
H. Richards, Bracebridge	Abundance	12½	22	6	18	18	76½	15,13
R. B. Barron, do	Banner	12½	19	8	18	18½	76	15
Wm. Barron, do	do	12	20	7	18	18	75	
J. B. Kaye, do	O. A. C. 72	13	20	6½	18	17	74½	15
STEPHENSON AND WATT AGR. SOCIETY.								
Judge—Wilson Black, Stroud.								
Chas. Nichol, Port Sydney	Reg. Banner	16½	24	9	19	22	90½	
N. Hammell, Utterson, R.R. 1	do	16½	24	8½	19	22	90	14
H. Rawson, do R.R. 1	do	16	23	8	18	22	87	
H. Creason, Ullswater	O. A. C. 72	16	22½	8	18	21½	86	10
P. Hammell, Raymond	Banner	15	23	8	18	21	85	
Geo. Hammell, Utterson, R.R. 1	Reg. Banner	14½	22	7	18	19½	81	
W. Hamilton, do	do	14½	22½	7	17	19	80	13
J. N. Billingsley, do R.R. 1	do	14½	20	8	17½	19½	79½	14,15
W. F. Somerset, Port Sydney	O. A. C. 72	14½	22	8	17	17½	79	15
W. J. Hammell, Raymond	Reg. Banner	14	21	7	18	18	78	15
F. M. Johnston, Utterson	Banner	14	21	7	18	17½	77½	
Leslie Bunn, Ullswater	O. A. C. 72	14	20	7	18	18	77	15
Jno. McNicol, Allensville	Abundance	14½	19	7	17	18½	76	15
Thos. Graham, Raymond	Banner	15	10	8	18	19½	70½	1,15
J. Forsyth, Parkersville	Abundance	12	19	5	17	17	70	
NIPISSING.								
BONFIELD AGR. SOCIETY								
Judge—J. N. Sorley, Ottawa								
Geo. Proulx, Bonfield	O. A. C.	15½	24½	9	18	20½	87½	
S. Boulanger, Grand Desert	Banner	15½	24	5	17	20½	82	
J. A. Boivin, Bonfield	O. A. C. 72	16	20	7	18	20	81	4
Geo. Decaire, Callender, Box 15		14	24	7	16	20	79*a*	
A. Rose, Bonfield	Banner	15	20	7	17	19½	78½	
Jos. Rose, do	Abundance	14	22	7	16	19	78	
J. H. Boissonneault, Grand Desert	Banner	14	24	6	15	18½	77½	
P. Boissonneault, Bonfield		14	24	5½	14	19½	75*a*	
A. Boulanger, Grand Desert	Banner	12½	23	6	14	17	72½	
Leo. Schank, Bonfield		14½	19	6	15	19	71½	*a*4
E. Beaulieu, do		12½	20	6	16	17½	70	15.

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OATS.

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NORTHUMBERLAND		[20]	[25]	[10]	[20]	[25]	[100]	
SEYMOUR AGR. SOCIETY								
Judge—J. C. H. Walsh, Port Hope								
Alex. Hume, Campbellford, R.R. 3	O. A. C. 72	15	24½	9	17½	22	88	15
C. E. Bonnycastle, do	do	15½	23	8	18	20½	85	15,14
Wm. Rannie, do do	do	15	24	8½	15½	21½	84½	10
A. H. McKelvie, do R.R. 4	Banner	11½	23	9	19	21½	84	15,10
Robt. Innes, do do 4	Abundance	13	22½	6	16½	19½	77½	15
G. Curle. do R.R. 3	O. A. C. 72	12½	21½	6	18½	18½	77	10
Mrs. W. W. Whitton, do do 3	Mam. Cluster	14	23	8	12	19½	76½	15
Jas. Runciman, Warkworth	O. A. C. 72	13	19	7½	18	18½	75	15, 14
M. H. West, Campbellford	do	12½	20	7	15	19	73½	15
Thos. Locke, do R.R.3.	do	10½	21	7	17	17½	73	9,15,14
ONTARIO								
BEAVERTON AGR. SOCIETY								
Judge—J. W. Hess, Trenton, R.R. 2								
J. Westlake, Beaverton, R.R.3	Banner	16	23	9	19	23	90	
Calder Bros., do	do	16½	22	8½	19	22½	88½	15
J. Harrison, do	O. A. C. 72	16	22	7	19½	23	87½	10
Mrs. J. J. King, Cannington, R.R. 2	Prince Royal	16½	22½	8	19	23	87*a*	15,
Robt. Ross, Beaverton, R.R. 1	Banner	13	22	9	19	23½	86½	
Fred A. Veale, do R.R. 1	Prince Royal	17	22	8	18	23	86*a*	
F. W. Rilance, do R.R. 2	Banner	15	22	8	18½	22	85½	4,10
G. M. Ross, do	do	15½	23	7	18	21½	85	15
Dugald Brown, do R.R. 1	Garton' Abund	14	20½	9½	17	23	84	
D. A. Brown, Sr., do R.R. 1	Banner	15	18	8½	19	23	83½	
D. R. McHattie, do R.R. 2	do	17	20	8	17	21	83	
Hodgkinson & Tisdale, Beaverton	do	15	18	8	19	22	82	15,10
Dunrobin Farms, Beaverton, R.R.1	do	15	17	8	17	22½	79½	
John Ross, do	do	13	18	8	17	23	79	15
P. Veale, do R.R.1	do	15	18	6	16	22½	77½	
SCOTT AGR. SOCIETY								
Judge—J. W. Hess, Trenton, R.R. 2								
F. Feasby, Uxbridge, R.R. 1	O. A. C. 72	16½	24	9	19	22½	91	
W. J. Rynard, Zephyr	do	18	23	8	19½	22	90½	
J. H. Lockie, do	Abundance	17	23	8	19	22½	89½	
A. Snowdon, do	O. A. C. 72	17½	23	8	19½	21	89	
Geo. R. A. Millar, Sunderland R.R. 2	Abundance	15	23½	9	18½	20½	86½	15
Jas. A. Smith, Sandford	Bumper King	16	23	8	18	22	85*a*	
E. O. Moore, Uxbridge, R.R. 1	O. A. C. 72	15½	22	8	17	21	83½	10
H. Keller, Zephyr	do	14	20	8	17	22½	81½	1
Thos. Sellers, do		14	22	7	18	20	79*a*	

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OATS.

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OXFORD		[20]	[25]	[10]	[20]	[25]	[100]	
EAST NISSOURI AGR. SOCIETY								
Judge—Geo. B. Little, Agincourt								
Mercer Bros., Thamesford, ...	Banner.....	16	22	7½	17	17½	80	
D. Thompson, do R.R. 2	do	14½	20	8	17	17½	77	
A. Whitstone, Lakeside, R.R. 2...	.....	16	20	8	16½	17½	76*a*	
Wm. Morrison, do do ...	O. A. C. 72.....	12½	21	7	18½	16	75	
W. J. Hogg, Thamesford, R.R. 2..	do	12½	19	7	18	16	72½	14
F. G. Seaton, Lakeside.....	do	11½	19	8½	17	14½	70½	
INGERSOLL, N., AND W. OXFORD AGR. SOCIETY								
Judge—C. C. Rokeby, Port Rowan								
A. D. Robinson, Ingersoll, R.R. 4	O. A. C. 72.....	16½	22	8½	19½	21½	88	
G. M. Nancekivell, do R.R. 5	do	16	20	8½	19½	21	85	12,15,14
W.W. Nancekivell, do	do	15	19	8	19½	18½	80	10,15
A. R. McNiven, do	20th Century.....	14	21	9½	16½	20	79*a*	14,15
G. A. Uren, do R.R. 2	Banner.....	13½	20	8	19	18	78½	15
J. G. Rawlings, Beachville, R.R. 1	O. A. C. 72.....	14½	21	8	15	18½	77	15
Geo. Way, Ingersoll, ...	do	15	10	8½	19½	20	73	2,11,15
H. W. Wilson, do R.R. 4	Ligowa.....	14½	17	9	14	20	72½	*a*15,14
D. W. Clark, do R.R. 1	20th Century.....	14	20	7½	15	18	72½	*a*14,15
SOUTH NORWICH AGR. SOCIETY								
Judge—Robt. Berry, St. Mary's, R.R. 1								
Thos. Pearce, Tillsonburg, R.R. 2.	O. A. C. 72.....	16½	23	8½	19	21	88	
Alex. Moore, LaSalette, R.R. 2....	do	17½	22½	7½	17	21½	86	14
Jas. Bolsby, Tillsonburg, R.R. 2...	do	15½	22½	9	17	21	85	
L. Mason, Otterville, R.R. 1.....	Banner.....	17	22	7	17½	21	84½	14
Ira Fox, Springford, R.R. 1	O. A. C. 72.....	16½	20	9	18	20½	84	10
Jos. Oatman, Tillsonburg, R.R. 2	do	15½	19½	8	19	20½	82½	15
Roy Oatman, do R.R. 2	do	17½	21½	7½	15	20½	82	15
Eli Barnham, Springford.....	do	15½	22	8	16½	19½	81½	15
Wm. Deer, Otterville, ...	Banner.....	15½	21	7	18	19½	81	
C. Hussey, do	O. A. C. 72.....	13	22	8	18½	19	80½	
Wm. Innis, do R.R. 1.....	Banner.....	14½	22	6½	18	18½	79½	
J. D. Monk, Springford, R.R. 1...	O. A. C. 72.....	17½	22	8½	10	20½	78½	14,15
Jos. McElhone, Otterville, R.R. 1.	Banner.....	13½	20½	7½	16	20	77½	15
F. Schooley, Otterville, R.R. 1....	O. A. C. 72	14½	18½	5½	19	19	76½	14
A. Lawrence, LaSalette, R.R. 2...	Banner.....	14½	18	7½	16	18½	74½	14,15
M. H. Haley, Springford, R.R. 1	O. A. C. 72.....	17	19	7½	10	19	72½	15,14
F. W. Lee, do do	do	16½	17½	8	10	20½	72½	15

NOTE—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
OXFORD.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
TILLSONBURG AND DEREHAM AGR. SOCIETY								
Judge—C. C. Rokeby, Port Rowan								
T. Nant, Brownsville	Banner	16	23	7	18½	20	84½	
J. D. McAlpine, Tillsonburg	O. A. C. 72	16	23	6	19½	19	83½	
P. Miner, do	Early Yielder	16½	22	7	19½	20	83*a*	15
Geo. A. Slaght, Mount Elgin	Abundance	15½	21½	8	17½	20	82½	14,15
H. Allin, Ostrander	do	16	23	7½	15	19½	81	
Angus Scott, Tillsonburg	O. A. C. 72	14½	20	9	19	18	80½	15
Roy Hughes, Ostrander	do	15½	16	7½	19½	20½	79	2
C. C. Hawkins, Brownsville	do	14½	20	7½	17½	18½	78	
O. Pettman, Ostrander	Banner	14	17½	8	16	19	74½	14,15
WOODSTOCK AGR. SOCIETY								
Judge—Geo. B. Little, Agincourt								
J. C. Karn, Woodstock, R.R. 1	O. A. C. 72	15½	20	7½	17	18	78	14
J. W. Innes, do	Banner	14½	20	7	17	17	75½	15,14
T. H. Dent, do	O. A. C. 72	14½	18	7	18	17	74½	10,12
J. S. Amos, do R.R. 5	do	14½	20	6½	16	17	74	
F. Garfat, do R.R. 1	do	12½	20	7½	15	17½	72½	15,14
E. Tree, do R.R. 3	do	14½	17	7	17	16½	72	
Jas. Pullen, do R.R. 1	Banner	13	15	7	18½	17½	71	1
B. R. Town, Beachville	do	13½	17	6½	16	17	70	
PARRY SOUND.								
ARMOUR, RYERSON AND BURK'S FALLS AGR. SOCIETY.								
Judge—J. A. McDermid, Collingwood.								
D. Mitchell, Burk's Falls	O. A. C. 72	15	22	8	19	16	80	15
H. Smith, do	do	14	22	8	18	15	77	15
J. T. Smith, Stirling Falls	Rennie's E. Yielder	13	20	8	18	15	72*a*	15
Wm. Chalmers, Burk's Falls	Mam. Cluster	13	20	7	16	14	70	15
CHRISTIE AGR. SOCIETY.								
Judge—J. B. Kaye, Bracebridge.								
Jas. White, Orrville	O. A. C. 72	17	24	10	19	20½	90½	15
W. H. Burns, do	do	17	23	9	18½	22½	90	
M. H. Harker, do	do	17⅓	24	9	18	19½	88	
J. Lawson, Maple Lake	Banner	17	23	9	18	19½	86½	
J. Teneycke, Broadbent	O. A. C 72	16	22	9	18	20½	85	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PARRY SOUND.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
CHRISTIE AGR. SOCIETY.—*Con.*								
Wm. Magee, Broadbent	Banner	16	22	9	18	20	85	
A. A. Healey, Orrville	O. A. C. 72	16½	23	8	18	18	83½	
J. A. Morrison, Maple Lake	Banner	16	20	8	18	19	81	
J. E. White, Orville	O. A. C. 72	15	21	8	18	18	80	
Ed. White, do	do	14½	21	9	16	18	78½	
D. Sword & Sons, Maple Lake	Banner	14	20	8	16	18	76	15
Geo. Culp, Orrville	O. A. C. 72	13	20	8	17	15	73	
D. Magee, Broadbent	Banner	12½	18	9	18	14	71½	
LORING AGR. SOCIETY. *Judge—J. C. Shaw, Norwich.*								
Jas. Smith, Loring	O. A. C. 72	20	22	8	20	22	92	
J. H. Bain, do	New Industrial	20	19	8	19	22	86*a*	
Richard Yeo, do	O. A. C. 72	16	12	8	18	22	76	
MACHAR AGR. SOCIETY. *Judge—J. C. Shaw, Norwich.*								
A. Ardiel, S. River	O. A. C. 72	16	20	8	18	21	83	
Jas. Hawthorne, Midford	do	15	20	8	18	20	81	
A. McCoig, South River	Mam. Cluster	15	19	6	17	19	76	
J. S. Cole, do	O. A. C. 72	15	18	8	16	18	75	
Jos. Wilson, do	Mam. Cluster	14	18	6	17	19	74	10
MAGNETAWAN AGR. SOCIETY. *Judge—H. L. Goltz, Bardsville.*								
Amos Keppy, Spence	O. A. C. 72	14½	23	8	19	18	82½	
Wm. Veitch, do	Abundance	14½	21	8	18	19½	81	
C. E. Miller, Magnetawan	O. A. C. 72	13½	20	7	16	19	75½	
H. Lennox do	Mam. Cluster	4	22	7	12	20	75	
Thos. E. Stewart, do	do	14	20	7	14	19	74	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.	
PARRY SOUND—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]		
M KELLAR AGR. SOCIETY.									
Judge—J. B. Kaye, Bracebridge.									
C. J. McKeown, McKellar	O. A. C. 72	15½	24	9	18	19½	86		
Jos. H. Ball, do	Yellow Russian	16	23	6	19	20½	84½	15	
Thos. Moffatt, do	O. A. C. 72	15½	23	8½	18	19	84		
Wm. Watkins, do	Mam. Cluster	16	23	7	19	18½	83½		
M. Whitmell, do	do	14½	24	8	17	18½	82		
R. S. Jackson, do Box 30	O. A. C. 72	15	23	8	16	18½	80½		
W. E. Taylor, do	do	15	22	8	16	18	79	14	
E. Buchmer, Hurdville	do	15	22	7	16	18	78		
C. W. Stewart, McKellar	do	13	24	6	18	16½	77½		
A. Moffatt, do	Early Yielder	12	24	9	14	17	76		
Wm. Moffatt, do	O. A. C. 72	14	23	5	16	17	75		
W. H. Moore do	Mam. Cluster	12½	22	8	16	14½	73	14	
Ed. Moffatt, do	Sterling	14	19	8	16	18	73*a*		
PERRY AGR. SOCIETY.									
Judg —J. J. Virtue, Hampton.									
H. Tebby, Sr., Fern Glen	O. A. C. 72	17	3	9	20	22	91	15	
H. R. Hayward, Scotia	do	16	24	9	18	20½	87½	15	
Jno. McPhail, Emsdale	Giant Cluster	17	24	7	18	22	86*a*		
E. Rowley, do	Bumper King	16	24	8	18	20	86*a*		
G. Roberts, do	Rennie's E. Yielder	15½	24	8	18	19½	83*a*		
A. Jenkin, do	Giant Cluster	15½	24	9	15½	20½	82½	*a*	
C. J. Rose, do	Charlton King	15½	22	9	15	22½	82*a*	15	
R. J. Gibson do	Giant Cluster	15	23	9	17	19⅓	81½	*a*	
Ed. Tonner, do	Mammoth Cluster	14	24	7	15	19½	79½		
Chas. T. Hayward, do	O. A. C. 72	13	20	9	18	19	79	15	
P. Brock, do	Irish	15½	22	8	16	19	78½	*a*15	
W. J. Murdy, do	Rennie's E. Yielder	15	22	6	17	20	78*a*		
Wm. Austin, Fern Glen	O A. C. 72	14	20	8	20	15	77	10	
Wm. G. Leigh, Scotia Jct	do	12	24	8	18	9	71	15	
POWASSAN AGR. SOCIETY.									
Judge—J. N. Sorley, Ottawa.									
Owen Gough, Powassan	Banner	17½	24	8	19	21⅓	90		
Jos. Alston, do	O. A. C. 72	16½	24	9	18	20½	88	15	
E. J. Purdon, do	do	17	22½	9	17	21	86½	15	
D. Graff, do R.R. 4	Imperial	16	24	7	19	21	85*a*		
J. A. Purdon, do	Banner	15½	22	9	18	20	84½	15	
L. A. Purdon, do	do	13	22	5	18	19	77	15	
A. R. Gangion, do	Imperial	14	23	5	17	19½	76½	*a*15	
H. J. Paul, do	O. A. C. 72	15½	22	5	14	19	75½	15	
L. Purdon, do	Banner	12½	23	8	14	17½	75		
D. McIntyre, do	O. A. C. 72	12½	24	6	16	16	74½		
E. R. Howe, do	Imperial	13	24	4	17	17	73*a*		
Jas. Oldfield, do	Newmarket	12½	21	5	18	18½	73*a*	15	
W. G. Oldfield, do	O. A. C. 72	11½	21	4½	17	19	73	15	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PARRY SOUND.—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
STRONG AGR. SOCIETY								
Judge—J. A. McDiarmid, Collingwood.								
John Paget, Sundridge	O. A. C. 72	13	22	7	20	14	76	15
Jas. Prior, do	Banner	13½	21	7	19	15	75½	15
Geo. Frost, do	O. A. C. 72	13	21	7	20	14	75	
Wm. Cottrell, do	do	14	19	6	19	14	72	
J. Battrich, do	Mam. Cluster	14	20	8	15	14	71	
Geo. H. Butson, do	do	14	19	8	15	14	70	
UNITED TPS. AGR. SOCIETY.								
Judge—H. L. Goltz, Bardsville.								
Wm. Hamilton, Dunchurch	O. A. C. 72	15	23	8	18	20	84	
R. J. Farley, do	do	15	22	8	17	20	82	
Geo. Simpson, do	do	14	21½	8	16	20½	80	
W. Quinn, McKellar	Mam. Cluster	14½	23	6	18	17	78½	
Wm. J. Dobson, Dunchurch	O. A. C. 72	13	22	6	17	20	78	1
W. Brear, Maple Island	do	13	23	6	18	17	77	1
Wm. Todd, do	do	12½	23	6	19	16	76½	
PEEL.								
PEEL AGR. SOCIETY.								
Judge—Geo. E. Foster, Honeywood.								
W. G. Witherspoon, Woodbridge	O. A. C. 72	18	24¼	7	17	22¼	88½	
T. C. Fraiser, Streetsville, R.R. 3	do	16	24	8	20	19½	87½	
W. Baldock, Malton, R.R. 2	do	18	25	9	12	22	86	
Richard Snell, Brampton, R.R. 3	do	18	22	9	15	21	85	1
Mrs. Davis, Streetsville	Abundance	18	15	8	18	21	80	1
Jas. R. Fallis, Brampton	O. A. C. 72	15	21	6	19	18	79	
W. J. Fraiser, Streetsville, R.R. 3	do	12	22	8	18	18	78	14
Wm. Findley, Norval	do	16	24	6	10	20	76	
TORONTO TP. AGR. SOCIETY.								
Judge—Geo. E. Foster, Honeywood.								
G. S. Bonham, Streetsville	O. A. C. 72	18	17	9	18	21½	83½	1
W. L. McCracken, Meadowvale, R.R. 2	Yel. Russian	17½	10	9	17	21½	75	1
J. B. Ross, Meadowvale, R.R. 2	O. A. C. 72	13	17	8½	16	19½	74	10,14
J. Miller, Streetsville, R.R. 2	do	15	18	8	14	18	73	1
Wm. C. Sparling, do	do	13	20	7	14	16½	70½	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PERTH.		[20]	[25]	[10]	[20]	[25]	[100]	
FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
Robt. Norris, Staffa, R.R. 1	Banner	14½	25	8	20	19	86½	
Alex. Cole, Russeldale	Yellow Russian	15½	23	8	19	19½	85	
Amos Doupe, Kirkton	Banner	12	22	7	19	20	80	12
H. R. Greenwood & Sons	do	16	15	9	19	19½	78½	
Geo. Krauskoff, Dublin	do	15	15	8	15	19	72	
Enos Dockin, do R.R. 2	do	14½	15	7	15	19	70½	
KIRKTON AGR. SOCIETY.								
Judge—J. C. Duff, Tara.								
Jas. Moore, St. Marys, R.R. 1	Banner	17	25	8	19	22	91	
D. Rodgers, do R.R. 1	Rennie's E. Yielder	17	24	8	17	23	87*a*	14
Jas. Robinson, do R.R. 1	Yellow Russian	16½	23	7	18	21½	86	12
W. Shier, Woodham	Reg. Banner	15	24	7	19	20	85	
Wm. Blackler, St. Marys, R.R. 1	Gold Drop	15	24	6	17	19	79*a*	
H. Switzer, do	Banner	15	15	7	18	21	76	1
Robt. Ratcliffe, do R.R. 1	do	15	15	7	15	19	71	
Chas. Atkinson, do R.R. 1	Yellow Russian	15	15	6	15	19	70	14
STRATFORD AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
J. Frasier, Stratford, R.R.	O. A. C. 72	16	22	8	19	20	85	14,15
Alex. Horne, Gad's Hill, R.R. 1	do	16	23	8½	18	19	84½	15
W. W. Ballantyne, Stratford, R.R.3	do	15	22	8	19	19½	83½	12,14,15,2
W. H. Douglas, St. Paul's	Yel. Russian	14½	21½	8½	18½	19½	82½	2,14,15
Jacob Lith, Sebringville	do	14	23	8	18	19	82	15
Alvin Cook, Stratford, R.R. 1	Am. Banner	14½	21	8½	18	19	81	15,2
Geo. Faulhafer, do R.R. 1	do	14½	22	8	17	19½	81	14,15
H. Pitts, do R.R. 1	O. A. C. 72	16	21	7	17	19	80	15,2
Geo. W. Ross, do R.R. 1	Am. Banner	14½	19	8	18	19	78½	15,10,2
E. Dunsmore, do R.R. 3	Early Yielder	14	21	8½	18	18½	78*a*	2,15
Fred Dunsmore, do R.R. 2	do	13½	21	8½	18	18½	77½	*a*14,2,15
E. Zinn, do R.R. 1	O. A. C. 72	13½	20	8	18	17½	77	2,15
Jno. Doering, do R.R. 1	do	13	19	8	18	18½	76½	2,15,10
D. Carroll, Gadshill, R.R. 1	do	14	18	8	17½	18½	76	15,14,12,2
J. Schmidt, Stratford, R.R. 1	Am. Banner	13	22	8	16	16½	75½	14,15
Herman Cook, do R.R. 1	do	14	19	8	16½	17½	75	2,15
E. Scheerer, do R.R. 4	O. A. C. 72	14½	18	8	14½	19½	74½	14,10,15
A. Elschner, do	King of the Field	16½	15½	8	16	20	74*a*	10,15,2,14
T. Wagner, do R.R. 1	Am. Banner	14	17	8	16	18½	73½	2,15
J. E. Neeb, do R.R. 1	O. A. C. 72	14	17	7	17	18	73	12,15,14
C. W. Dunsmore, St. Pauls	Reg. Banner	13½	18	8	15	18	72½	15
W. T. Whalmy, Stratford, R.R. 1	O. A. C. 72	14	17	7	15	18	71	2,15,14
C. Scheerer, do R.R. 1	Newmarket	13	15	8	17	19	70*a*	15,2,10

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

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PETERBOROUGH.		[20]	[25]	[10]	[20]	[25]	[100]	
LAKEFIELD AGR. SOCIETY. *Judge—W. Monaghan, Wellington, R.R. 1.*								
T. H. Northey, Halls Bridge	Banner	16½	24	8	19	22½	90	15
T. Garvey, Lakefield, R.R. 1	do	16	22	9	18	23	88	14
R. G. Charlton, do R.R. 4	O. A. C. 72	16	22	9	18	22	87	14
H. Abbott, do R.R. 2	do	16	22	8	18	22	86	15
B. L. Dench, do R.R. 4	Banner	16½	19	9	18	23	83½	
Jno. A. Crowe, do	O. A. C. 72	16	19	8	19	23	85	
E. J. Calvin, do	do	17	15	8	18	22	80	15
G. A. Graham, do R.R. 2	Banner	17	15	8	16	22	78	1
A. Davis, do R.R. 3	O. A. C. 72	15	18	5	16	21½	75½	13
Thos. Whibbs, do R.R. 4	Banner	13½	15	6	18	19½	72	1
OTONABEE AGR. SOCIETY. *Judge—H. E. Redner, Rednersville.*								
F. A. Eason, Keene, R.R. 1	Danish Swede	18	24	9	19½	23	91½	*a*15,14
S. McIntyre, do R.R. 2	Abundance	16	24½	8	19	22½	90	
W. A. Nelson, do R.R. 1	Danish Swede	17½	24½	8½	18½	21½	88½	*a*
R. A. Nelson, do	do	16½	24	8½	19	22	88	*a*10
R. E. Drummond, Peterboro, R.R. 8	Siberian	16	24	8	19	22	87	*a*15
M. O'Keeffe, Keene, R.R. 1	Banner	16½	18½	9	19½	23	86½	10,15
C. C. Nelson, Peterboro, R.R. 8	Danish Swede	15½	24	8	19	21	85½	*a*14,15
Wm. Stewart, Keene, R.R. 2	Canadian Pride	16	24½	8½	19	19½	85	½*a*
S. M. Comrie, Peterboro, R.R. 8	Danish Swede	16	21	8	20	22	85	*a*15
Jno. E. Manley, do R.R. 8	Abundance	16	22	7½	19	19	83½	
W. A. Drummond, do R.R. 8	Ligowa	16½	17½	8	19	22	81	*a*4,10,14,15
M. McCarthy, Keene, R.R. 1	Wide Awake	13	18	8	18	18½	73½	*a*15,13½,4,
PETERBORO IND. AGR. SOCIETY. *Judge—H. E. Redner, Rednersville.*								
H. G. Webber, Peterboro, R.R. 3	Royal Banner	16½	24½	8½	19	22	90½	15
F. Staples, do	Banner	15	24	8	20	21	88	15
Gordon Mann, do	do	16	23½	7	17½	21½	86½	
J. A. Carl, Fraserville	Waverly	15½	24	8	18	21	84½	*a*15
J. D. Fowler, Peterboro, R.R. 4	White Wave	15	24½	7½	18	21	84	*a*
W. A. Roseborough, do R.R. 4	Sensation	16	24	9	15	21	83	*a*10,15
A. B. Mann, Smithbank, R.R. 4	O. A. C. 72	16	19	8	18	21½	82½	
Wm. Steinkraus, Peterboro, R.R. 8	New Century	14	21	7½	19	20½	80	*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	†Weeds in competitors' fields.
PETERBOROUGH—*Continued*:		[20]	[25]	[10]	[20]	[25]	[100]	
PETERBORO IND. AGR. SOC.—*Con.*								
S. J. Dixon, Peterboro, R.R. 8	Stirling	13	23	7½	18	20	79½	*a*
R. B. Rodgers, do R.R. 4	Banner	15	17	7½	18½	21	79	
W. McKee, do	O. A. C. 72	18	6	9	17½	23	73½	
R. A. Garbutt, do	20th Century	15	9	8	18	23	71	*a*
PRESCOTT.								
ALFRED AGR. SOCIETY.								
Judge—Geo. R. Bradley, Kars.								
Sam'l. Chartrand, Alfred	Banner	18½	22	8	20	22	90½	15
Alex. Charbonneau, do	do	16½	22	8½	20	22	89	
D. Charbonneau, do	do	16½	24	7½	20	20½	88½	15
Jos. Gascon, do	do	17	25	8	16	21	87	
D. Parisien, do	do	17½	22	8	18	20	85½	15,4
F. Provost, Plantagenet	do	17½	20	8	18	21½	85	4,15
O. Parisien, Alfred	do	15½	20	8½	19	21	84	4,15
T. A. Cadieux, do	Washington	16½	20	8	18½	20½	81½	*a*12
A. Langon, do	Banner	15½	20	7½	18	20	81	4,12
Jos. Parisien, do	Washington	16½	21	7½	17	20	80*a*	15,4
A. Daoust, do	do	15½	20	7	18½	20½	79½	*a*4,15,12
J. Brisebois, do	Banner	14½	18½	7½	18	20½	79	15,8
M. Villemaire, Alfred	Banner	15½	18	8	17	20	78½	4
E. Parisien, do	Washington	15½	19	8	17	20½	78*a*	15,4
Sam'l Parisien, do	Banner	15	17	8	17½	20	77½	4,15,8,5
Xavier Chenier, Plantagenet	do	14½	20	7	17	18½	77	
F. Daoust, Alfred	do	16	19	7	15	19	76	4,15
A. Landriault, do	do	16	16	7	17	19	75	4,15
A. Bissonnette, do	do	16	15	8½	15	20	74½	15,10
A. Laroux, Plantagenet	do	15½	17	7½	15	19	74	10,15,5
Jos. Robillard, Alfred	Washington	14	16	8	16	19½	71	15½ *a*
PRINCE EDWARD.								
AMELIASBURG AGR. SOCIETY.								
Judge—G. W. Davidson, Kemptville.								
Jno. A. Walker, Rossmore	Yel. Russian	16	22½	8	18½	23	88	
Jas. R. Anderson, Mountain View	Industrial	15½	23	8	20	23	87½	*a*
Jno. A. Weese, Rossmore	O. A. C. 72	16	22	8	19	22	87	
L. Wallbridge, do	Ligowa	16	23	8	19	22	86*a*	4
J. S. Barber, do	Yel. Russian	16	20	7	19	22	84	15
Fred Motley, do	do	16	22	7	18	20	83	14
J. S. Wallbridge, do	do	13	22	7	19	19	80	
C. R. Parliament, Ameliasburg	do	16	21	8	15	19	79	14,15
E. E. Wallbridge, Rossmore	Century	14	20	6½	18½	18½	75½	*a*2
H. Young, do	Yel. Russian	16	18	7	14	20	75	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PRINCE EDWARD—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
PRINCE EDWARD AGR. SOCIETY. *Judge—S. H. Treverton, Belleville.*								
E. B. Purtelle, Bloomfield	Mam. Cluster	18	25	9	20	24	96	
M. Gilbert, Demorestville, R.R. 3	do	19	25	9	19	23	95	
M. G. Thompson, Bloomfield, R.R 2	O. A. C.	18	23	9	18	23	91	
M. Huff, Bloomfield	O. A. C. 72	16½	22	9½	20	21½	89½	
A. B. Wilson, do	do	17½	22	8	18	23	88½	
A. MacDonald, Picton, R.R. 1	do	17	21	8	18	24	88	
F. Hubbs, Bloomfield, R.R. 1	Prince of Wales	16	22	9	18	21½	84½	*a*
W. W. Leavitt, Woodrous	Banner	16	20	8	17	20	81	10
R. Young, Woodrous	O. A. C. 72	14½	18	8	18	22	80½	
Matthie Bros., Bloomfield	do	16	20	8	16	19	79	
C. Mallory, do	do	14½	17	7½	18	19	76	4
SOPHIASBURG AGR. SOCIETY. *Judge—S. H. Treverton, Belleville.*								
Urias Nelson, Demorestville	O. A. C. 72	18	22	8	18	24	90	
W. Rightmeyer, Picton, R.R. 8	Banner	16½	24	9	18	22	89½	
E. W. Gosline, Demorestville	O. A. C. 72	17½	20	9	18	23	87½	
S. Mills, do R.R. 1	Elmhurst	13½	24	9	19	23	86½	*a*
K. Spafford, Picton, R.R. 8	Banner	18	20	9	18	21	86	
Trumbel Bros. do R.R. 8	do	15½	21	8	17	22	83½	
C. H. Kent, do R.R. 2	O. A. C. 72	16	20	8	18	21	83	
W. H. Allison, do R.R. 8	Banner	16	21	7	18	18	80	
T. A. Crawford, do	Elmhurst	15	20	9	17	19	78*a*	4
RAINY RIVER. ATWOOD AGR. SOCIETY. *Judge—J. E. Locking, Emo.*								
F. Gosselin, Rainy River	Golden Rain	19	10	9	20	24	80*a*	15
D. A. McQuarrie, do	Ligowa	17	10	9	18	25	77*a*	15
A. E. Hodges, do	Golden Rain	17	10	9	18	23	74*a*	15
Carl Peters, Sleeman		19	10	5½	15	25	72½	*a*
A. J. Hunter, do	Am. Banner	18	10	8	14	22	72	15
H. J. Hodges, do	Abundance	18	10	5	15	22	70	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	Yield and quality of grain.	Totals of scores.	Weeds in competitors' fields.
RENFREW.		[20]	[25]	[10]	[20]	[25]	[100]	
COBDEN AGR. SOCIETY.								
Judge—J. H. Wiggins, R.R. 4, Kemptville.								
W. Burns, Cobden, R.R. 3	Banner	17	23	8	18	20	86	
L. Cropley, Cobden, R.R.	do	15	23	8	18	21	85	
Sam'l McLaren, Cobden	O. A. C. 72	15	21	8	18	20	82	
W. McMillan, do R.R. 6	Banner	14	20	8	17	21	80	
E. Kenney, Pembroke, R.R. 2	O. A. C. 72	14	21	8	17	19	79	15
W. J. Connelly, Cobden	do	15	19	8	17	19	78	
J. C. Bulmer, do R.R. 1	Banner	13	20	8	17	19	77	
Lloyd McBride, do R.R. 3	Mam. Cluster	13	20	7	17	19	76	
H. Hawkins, do R.R.	Banner	14	18	7	16	20	75	
A. Johnston, do R.R. 5	O. A. C. 72	13	20	7	17	16	73	
RUSSELL.								
RUSSELL AGR. SOCIETY.								
Judge—J. H. Wiggins, Kemptville.								
Reuben Lake, Russell	O. A. C. 72	17	23	8	18	22	88	
D. Cummings, do	Banner	16	21	8	19	22	86	
E. Hamilton, do	O. A. C. 72	16	20	8	19	22	85	
H. F. Carscadden, do	Banner	16	20	8	18	20	82	
E. Summers, do	O. A. C. 72	14	20	7	18	20	79	
H. F. Boyd, do	Banner	15	18	8	17	20	78	15
John Paul, do	do	15	16	8	18	20	77	
Wm. P. Cherry, do	do	14	17	8	17	18	74	
Wm. Boothe, do	Western	15	16	8	16	21	74*a*	
R. & E. Young, do	do	13	18	8	16	20	73*a*	
D. Cummings, do	O. A. C. 72	11	18	7	17	18	71	
SIMCOE.								
COLDWATER AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill.								
C. A. Goss, Coldwater, R.R. 3	O. A. C. 72	16½	21	7½	17	20½	82½	1,14
A. A. Hawke, do	do	17	18	8	18	21	82	
O. H. Swan, Victoria Harbor, R.R.1	Golden Drop	15	22	6½	16½	19½	77½	*a*15
J. J. Shields, Waubaushene, R.R. 1	do	15½	20	7	16½	20	77*a*	15,10
Leslie Archer, Lawson	Ligowa	15½	19	7½	17	19½	76½	*a*15
Chas. Lovering, do	Banner	15	18	7	16	19½	75½	15,14
R. A. Walker, Coldwater	O. A. C. 72	13½	22	6½	15	18	75	10
A. Walker, do R.R. 2	Banner	13½	22	6½	16	16½	74½	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
SIMCOE—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
NOTTAWASAGA AND GT. NORTHERN AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
D. McLaughlin, Creemore, R.R. 2.	Banner	15½	18	6	14	19	72½	15,14,1
D. Smith, Smithdale	O. A. C. 72	14½	18	7	18	14	71½	15
A. Morrison, Creemore, R.R. 2	do	13	20	7	18	12	70	2,15
TINY AND TAY AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
Levi Jones, Midland, R.R. 1		16½	22	8	12	21½	78*a*	15,14
Thos. Rankin, Wyebridge, R.R. 1.	O. A. C. 72	15½	18	6	18	16	73½	1,15
Jno. Runney, Victoria Harbor, R.R. 1	do	16	20	4	15	16½	71½	15
Wm. Charles, Wyebridge, R.R. 1	do	16½	15	7	16	16½	71	1
SUDBURY.								
WARREN AGR. SOCIETY.								
Judge—Peter Wilson, Cobden.								
E. A. Bartlett, Warren	O. A. C. 72	18	22	8	19	23	90	9
M. Laplante, do	do	16	24	7½	19½	22	89	9
W. E. Blain, do	do	17	22	8½	18	23	88½	17
A. Wm. Woods, do	do	18½	20	8	19	22½	88	9,17
R. A. Bartlett, do	do	17	20	8½	19	23	87½	15
W. Dixon, do	do	18	22	8	17	22	87	9
F. McDonald, do	do	16½	20	8	19	21	84½	10,17
E. P. Curry, do	do	16	20	8	18	21	83	9,17
Geo. Nicholson, do	do	16½	18	8	18	21½	82	9,15
Jno. Montgomery, do	do	15	18	8	18	21½	80½	9,17
H. A. Batsford, do	do	15½	18	8	17	21½	80	17
A.A.Montgomery, do	do	16	18	7	17	21	79	9
D. Shea, do	do	16	16	8	17	21	78	9,17,4
A. Stewart, do	do	15½	16	9	14	21	75½	4,15,9
TEMISKAMING.								
COCHRANE AGR. SOCIETY.								
Judge—Geo. McKague, Woodville, R.R. 4.								
A. Sigouin, Cochrane	Banner	18	24	8	18	20	88	
H. Rowan, Clute	O. A. C. 72	17	24½	8	19	19	87½	
A. N. Golding, do	Banner	16½	24½	7	19½	19½	87	
Jos. St. Amour, Cochrane	O. A. C. 72	16	23½	9	17	19½	85	7

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OATS.

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TEMISKAMING—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
COCHRANE AGR. SOC.—*Continued.*								
T. F. Travis, Cochrane,	Banner	15½	24	9	18	18	84½	
O. Sigouin, do	do	16½	23	7½	18	19	84	
N. McPhee, do	do	15	24½	7	19	18	83½	
P. H. Ouimeth, do	O. A. C. 72	16	24	7	17	19	83	
A. Hewson, do	Western	16	23	8	18½	19	82½	*a*7
A. Vallee, do	Banner	15	21	9	19	18	82	15
Wm. Chalmers, do	O. A. C. 72	11	24	9	19½	18	81½	15
M. J. Cowan, Clute	Banner	15	24	6	18	18	81	
L. Gardiner, Cochrane		14½	23½	9	18	17½	80½	6,7
John Foster, Clute	Banner	13½	24	7	18	17½	80	
Jno. Sawyer, Cochrane	O. A. C. 72	14	24	8	16	17½	79½	
Robt. Nixon, do	do	16½	20	9	15	18	78½	8
E. J. Cripps, do	Banner	14½	19	9½	16	18	77	7
Fred Foster, Clute	do	13	20	7	19	17½	76½	15
ENGLEHART AGR. SOCIETY.								
Judge—G. A. Williams, Guelph.								
A. W. Skinner, Englehart	O. A. C. 72	17½	22	9	19	22	89½	
H. Anyan, do	do	15½	24	9	18½	20½	87½	
Jno. Allen, Heaslip	Gold Rain	17	22	9	18½	21	85½	*a*
Thos. S. Woollings, Englehart	Banner	16	22	8	19	19½	84½	
H. Johnston, do	do	16½	21	7	18	18½	81	
Jas. Harman, Heaslip	do	14	21	9	17	19	80	
Geo. Kirbyson, do	O. A. C. 72	16½	20	4	17	20½	78	
H. Blackburn, Wabewawa	do	13	20	7	18	19½	77½	
Jos. Schaffner, Brentha	O. A. C. 3	13	21	9	15	19	77	
R. H. Emrick, Heaslip	Banner	14	20	6	17	19	76	
W. Remus, Englehart	O. A. C. 72	13	18	7	18	18	74	
Geo. Green, do	Banner	11½	20	8	16	18	73½	
A. Hayes, Wabewawa	O. A. C. 3	14	22	8	10	18	72	
MATHESON AGR. SOCIETY.								
Judge—Geo. McKague, Woodville, R.R. 4.								
D. Graham, Matheson	O. A. C. 72	18	24	7½	19	21	89½	14
Geo. A. Fleming, do	Banner	18	23½	9	18	20½	89	6
W. Kirstine, do	do	16½	24	9	18½	20½	88½	
E. Monahan, do	do	17½	22½	8½	18	21	87½	7,6
B. Graves, do	O. A. C. 72	16	24½	7	19½	20	87	
R. J. Lougheed, do	Arabian	18	23½	8½	18	20½	86½	*a*
N. Gibson, do	Banner	17	24	9	15	21	86	
W. Monahan, do	do	16½	22	9	18	20	85½	1
F. E. Ginn, do	Abundance	14½	23	9	19	19½	85	7
Robt. Bishop, do	Granary Filler	18	24	7	16	19½	84½	
E. Hunt, do	Banner	16	23	8	18	19	84	15

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OATS.

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TEMISKAMING—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
NEW LISKEARD AGR. SOCIETY.								
Judge—G. A. Williams, Guelph.								
R. D. Chester, New Liskeard, R.R. 1	Mam. Cluster	16	23	8½	18½	19	85	
Jno. R. Philip do R.R. 1	O. A. C. 3	16	23	7½	17	20½	84	
J. M. Gray, do	Gold Rain	17	23	7½	17	20½	83*a*	
A. J. Kennedy, do	Bumper King	16	23½	9	16	18½	81*a*	
E. Maille, do	Abundance	17	22	5	15	21	80	
S. Jewell & Son, do	Bumper King	15	23	9	16	18	79*a*	
Geo. Walsh, do	O. A. C. 72	15	21	6	16	20	78	
C. Hurd, do R.R. 2	do	15½	20	8	16	18	77½	
Bruce Irvine, Hanbury	Abundance	18	21	9	10	19	77	
R. Parker, Uno Park	O. A. C. 72	13½	17	8	19	19	76½	
Edson Jibb, New Liskeard	Abundance	17	21	8	10	20	76	
W. R. Peters, Uno Park	O. A. C. 72	14	18	8	16	18½	74½	
THUNDER BAY.								
OLIVER AGR. SOCIETY.								
Judge—G. H. Farmer, Sault Ste. Marie.								
Thos. Yelland, Murillo	Banner	17½	23	8	18	22½	89	4
A. Trotter, do	Abundance	15½	23	8	18	20	84½	
R. B. Martyn, do	Banner	16	22	8	17	21	84	15
R. R. Everett, do	Bole, No. 10	17	23	7	17	21	83*a*	
Sam'l McNally, do	O. A. C. 72	16	20	7	17	21½	81½	15
Geo. Munro, do	Banner	15½	20	8	17	20	80½	15
H. Gorton, do	O. A. C. 72	14	22	7	17	19	79	
Chas. Gorton, do	do	15	21	7	16	19½	78½	
Jno. Fenton, do	Bole, No. 10	16	21	7	16	20	78*a*	9
Jas. Stevenson, do	Banner	14	20	7	17	19	77	15
Wm. Reid, do	do	16	17	7	16½	20	76½	
Herb. McNally, do	Rennie's E. Yielder	13½	22	7	17	18½	76*a*	
Jos. Hughes, do	Banner	13	21	7	17	18	76	
M. Hennessy, Millar	Western	14½	20	7	15	20	74½	*a*
Jno. McDonald, Murillo	Banner	13½	17	7	17	18½	73	15,17
WEST ALGOMA AGR. SOCIETY.								
Judge—G. H. Farmer, Sault Ste. Marie.								
M. Swords, Slate River	Golden Rain	17	23	8	18	22	86*a*	
R. W. Gray, 226 Cummings St., Fort William	do	17	24	8	17	21½	85½	*a* 15
F. W. Carter, Murillo	Banner	16½	21	7	17	22	83½	1
G. McLaren, Box 556, Fort William	Golden Rain	15½	21	7	18	21	80½	*a*
J. R. Hutchison, Slate River	do	17	22	7	17	19	80*a*	
S. Perrier, Baird	Banner	14½	20	7	16	20	77½	
A. Perrier, do	do	14½	19	7	16	19	75½	10

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OATS.

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THUNDER BAY—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
WHITEFISH VALLEY AGR. SOCIETY.								
Judge—G. H. Farmer, Sault Ste. Marie.								
H. Wheal, Hymers	O. A. C. 72	16	24	7	18	22	87	
Sam'l North, S. Gillies	Leader	16	24	7	18	21½	84½	*a*
Jos. Woods, do	do	16½	23	7½	18	20½	83½	*a*7
Paul Tessolin, Hymers	O. A. C. 72	16	23	7	17	20	83	15
A. Parker, do	do	15	24	6	17	20	82	
F. Sitch, do	do	14½	21	7	16	20½	79	
M. Kolibik, do	do	17½	8	8	17	23½	74	1,2
H. P. Sisson, do		11½	23	6	15	18	71½	*a*
VICTORIA.								
EMILY AGR. SOCIETY.								
Judge—R. H. Crosby, Markham.								
Bert Sanderson, Omemee	Abundance	17½	22	9	19½	20½	88½	15
Geo. Griffin, do	do	17	22	9½	16	21½	86	15
Chas. Downey, do	Banner	17	20	8	19½	20½	85	10,15
W. Burgess, do	do	16½	22	9	16	19½	83	15
R. W. Wilson, do	O. A. C. 72	17½	17	8½	18	20½	81½	1,15
D. H. Dick, do	do	18	15	9	17	21½	80½	2,15
A. McQuade, do	Banner	17½	15	8½	17½	20	78½	1,15
Robt. Boyd, Omemee	Banner	17½	10	9	19½	22	78	2
W. Wilson, do	O. A. C. 72	17½	14	9	16	21	77½	1,8,15
J. H. Dick, do	do	18	10	9	17½	21	75½	1,15
H. Duyett, do	Banner	17½	10	9	14	20½	71	1,5,15
WELLAND.								
FENWICK AGR. SOCIETY.								
Judge—D. McClure, Toronto.								
A. E. Howell, Fenwick, R.R. 5	O. A. C. 72	16	24	8	19	22	89	15
J. Haist, Ridgeville, R.R. 1	do	16	24	8	19	21½	88½	14
F. C. Haist, do R.R. 1	do	15½	24	8	19	21½	88	14
J. H. Haist, Fenwick, R.R. 5	do	15	22	8	19	22	86	15
Geo. Haist, Fonthill	do	15	24	8	19	19	85	15
D. Haist, do	do	15½	23	7	19	19	83½	
C. L. Beckett, Ridgeville, R.R. 1	Banner	15½	18	8	18	18½	78	14,15,10
M. A. Mansfield, Fenwick, R.R. 5	O. A. C. 72	14½	19	7	18	18½	77	15,14
P. J. Bea, Ridgeville, R.R. 1	do	14	17	7	18	17	73	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
		[20]	[25]	[10]	[20]	[25]	[100]	
WELLINGTON.								
CENTRE WELLINGTON AGR. SOCIETY								
Judge—D. English, Burketon Sta.								
A. A. Armstrong, Fergus	Reg. Banner	19	22	8	20	23	92	
Alex. Lindsay, do	Banner	17½	23	9	17	23	89½	13,15
R. S. Gale, Elora	Granary Filler	16½	22	8	18	22	86½	15
Jas. L. Benham, Rockwood, R.R. 3.	Abundance	16	20	8	18	21	83	15,14
J. P. Bosomworth, Elora	Elmhurst	17½	20	7	16½	23	82*a*	15
Colbeck, Bros. do	do	15	23	7½	16	22	81½	*a*15
Robt. Cummings, do	Abundance	16½	22	7	15	20½	81	15
Jno. Lowe, do	O. A. C. 3	15½	23	8	17	19	80½	*a*14,15
Wm. Hutcheon, Rockwood, R.R. 1	O. A. C. 72	14	18	7	20	20½	79½	15,14
Ross Bros., Fergus	do	13½	20	7	16	20½	77	15
Wm. French, Elora	Abundance	14	15	8	16	20½	73½	1,15
L. Armstrong, Fergus	Reg. Banner	13½	18	8	13	20	72½	14,15
J. H. Anderson, do	O. A. C. 72	13½	15	7	16	20	71½	
ERIN AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill.								
S. W. Bingham & Sons, Hillsburg, R.R. 2	Banner	17½	23	8½	20	21½	90½	
D. S. Sinclair, Erin	Reg. Banner	15½	25	7	20	20½	88	
R. D. Nodwell, Hillsburg	Banner	16½	24	7	20	20	87½	
F. McMillan, do	do	17	22	7½	20	20½	87	
J. L. Overland, Erin, R.R.	do	16	23	8	19	20	86	
E. Barbour, Hillsburg, R.R 2	O. A. C. 72	15½	21½	8	20	20½	85½	15
Jas. Milloy, Erin, R.R. 1	Reg. Banner	16½	18	6	20	20½	81	15
								11
MOUNT FOREST AGR. SOCIETY.								
Judge—Jno. McDiarmid, Lucknow.								
Thos. Dingwall, Holstein	Banner	15	23	7½	18	21	84½	
D. McQueen, Mt. Forest, R.R. 1	do	17	20	8	18	21	84	
Jno. D. Ross, do	Banner & O.A.C. 72	13	23	7½	17½	21½	82½	
A. Hutchinson, do	O. A. C. 72	16½	20	7½	18	20	82	
N. McLeod, Harriston R.R. 3	Elmhurst	16½	19½	7½	18	22	81½	*a*
W. J. Wallace, Mt. Forest, R.R. 2	O. A. C. 72	15	20	8	18	20	81	
Geo. W. Crow, do	Yel. Russian	14½	22	7	16	19	78½	
A. Kirkness, do R.R. 5	Imp. Banner	15	18	7½	17	20	77½	
J. W. Ghent, do R.R. 5	O. A. C. 72	15	16	7	16	21½	75½	
D. Murphy, do	Rennie's E. Yielder	15	21	7	12	20½	75½	
Brown Bros., do	O. A. C. 72	14½	18	8	14	19	73½	

NOTE.—The figres in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WENTWORTH.		[20]	[25]	[10]	[20]	[25]	[100]	
ANCASTER AGR. SOCIETY. *Judge—D. I. McClure, Toronto.*								
N. W. Shaver, Ancaster	Banner	15	24	7	18	21½	86½	14
B. B. Brown, Ryckman's Corners	Elmhurst	17	22	8	16	22	83*a*	15
W. H. English, Ancaster, R.R. 1	O. A. C. 72	16	19	7	18	19½	79½	15
J. T. English, do	Derby	15½	20	8	18	19½	79*a*	15
Cecil Brown, Hamilton, R.R. 4	Banner	14½	20	8	17	18½	78	10
W. E. Shaver, Ancaster, R.R. 1	do	14½	18	7	18	18½	76	15
P. O. Vansickle, Alberton		13	18	8	17	21	75*a*	15,14
T. G. Brown, Ancaster	O. A. C. 72	12	18	7	16	18	71	15,14
Ed. Lyons, do	do	11½	22	7	17	13	70½	15,14
BINBROOK AGR. SOCIETY. *Judge—Geo. McKague, Woodville, R.R. 4.*								
I. W. Freeman, Glanford, R.R. 1	Banner	18½	24	8	19½	21	91	
Geo. Daw, do R.R. 1	do	17½	23	9	19½	20½	89½	
H. Johnson, Binbrook	O. A. C. 72	16½	23	9½	20	20	89	
J. S. Switzer, Glanford, R.R. 1	Banner	17½	23	8	18½	21	88	
Robt. Young, Jr., do	do	18	24	8	16	20½	86½	
P. Gowlands, do	do	17½	21	8	19	19	84½	
Thos. S. Fletcher, Hannon, R.R. 1	do	14½	24	8	19	18½	84	
Jos. I. Fletcher, do R.R. 1	do	14	24	8	19	18½	83½	
N. A. Fletcher, do	O. A. C. 72	14	24	8	19	18½	83½	
Thos. Evans, Glanford	Banner	17½	21	8	15	21	82½	
WATERDOWN AGR. SOCIETY. *Judge—H. L. Tisdale, Brampton.*								
Jno. A. Bennett, Campbellville, R.R. 3	Granary Filler	15½	22	9½	17	21	85	15
W. H. Drummond, Waterdown, R.R. 1	Reg. Abundance	16½	22	7	18	21	84½	14,15
L. Bennett, Carlisle	Granary Filler	15	16	9	19	20	79	
Horning, Bros., Waterdown, R.R.11	O. A. C. 72	14	18	7	20	19	78	14,15
Jno. Duncan, do	Yel. Russian	16	22	6	14½	19	77½	14
B. Binkley, Flamboro Centre	O. A. C. 72	15	16½	10	16	19	76½	
J. H. Drummond, Millgrove	Reg. Abundance	17	18	9	0	21	75	15
Geo. Hood, Waterdown	Scottish Chief	17	16	7	7	18	73*a*	14
Ed. Harris, Flamboro Centre	O. A. C. 72	15	10	9	9	20	73	15,14

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WENTWORTH—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
WEST FLAMBORO AGR. SOCIETY.								
Judge—H. L. Tisdale, Brampton.								
F. H. Medevin, Greensville	Yel. Russian	18	20	9	19	22½	88½	15
C. W. Goodbrand, Hamilton, R.R. 2	Banner	17	20	9	19	21	86	15
Wm. J. Pegg, Millgrove, R.R. 1	O. A. C. 72	16	23	7	19	20	85	15
Jas. Beaton, Hamilton, R.R. 2	do	16½	20	6	18	20½	81	14,15
Chas. Boyle, Puslinch, R.R. 3	Mam. Cluster	15	19	8	18	20	80	9,14,15
E. Gartley, Millgrove, R.R. 1	O. A. C. 72	16	18	10	15	20	79	15
H. Hamilton, Harper's Corners	Mam. Cluster	15	18	8	18	19	78	14,15
W. Lambien, Millgrove	Banner	17½	16	9½	13	21	77	14,15
Thos. Goodbrand, Waterdown, R.R. 1	Yel. Russian	16	18	7	14	21	76	14,15
B. Gunby, Mountsburg	Abundance	14	17	10	13	20	74	15
W. E. McFarlane, Millgrove, R.R.1	do	15½	19	9	12	20	73½	14,15
E. Fulton, Harpers Corners	do	16	16	7	15	18½	72½	15
YORK.								
RICHMOND HILL AGR. SOCIETY.								
Judge—D. J. Gibson, Bowmanville.								
F. A. Clarke, Gormley, R.R. 1	O. A. C. 72	17½	23	8	19	22½	90	15
A. Jones, Maple, R.R.	New Banker	17	24	9	18	23	89*a*	
Jno. Young & Sons, Milliken	Yel. Russian	15	23	7	19	22	86	10,15
Noah Hoiles, Maple, R.R.	O. A. C. 72	15	24	6	17	21	83	14
Wm. Woods, do R.R.	Mam. Cluster	15	17	7	15	22	76	10,15,14,4
J. S. McNair, Elgin Mills	Imp. Ligowa	15	19	8½	16	19	75½	*a*10,15
Wm. Oliver, Maple,	O. A. C. 72	15	18	7	14	21	75	15
Robt. Millen, do R.R.	do	14½	16	8	16	20	74½	14,1,15,10
O. D. Bales, Lansing	Mam. Cluster	16	14	9	15	20	74	10,15
J. Brillinger, Richmond Hill	do	14	16	9	12	21	72	4,15
E. T. Stephens, do	O. A. C. 72	16½	10	6	17	21	70½	
G. H. Pepler, do	do	16	10	9	13	22	70	1,15,4,10
SCARBORO AGR. SOCIETY.								
Judge—Alex. Morrison, Greemore.								
Laurie Bros. Agincourt	Granary Filler	17	24	9	19	23	92	15
W. A. Paterson, do	Banner	17	24	8	18	23	90	14
G. B. Little, do	do	17	22	9	18	23	89	10
W. Loveless, Scarboro Jc	Reg. Banner	16	22	9	18	22	87	15
J. S. Baird, do	O. A. C. 72	16	22	8	17	22	85	14
Jas. Scott, Agincourt	Imp. Banner	15	21	9	18	21	84	2
A. P. Wheeler, do	Banner	14½	22	8	15	22	81½	15
H. Elliott, do	do	13	20	8	16	22	79	15
W. D. Brown, do	do	13	20	8	16	20	77	2
A. Crichton, Scarboro Jct	Chester	13	20	8	15	20	74*a*	2
W. H. Munro, Agincourt	Banner	13	18	7	15	20	73	15

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
YORK—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
WOODBRIDGE AGR. SOCIETY.								
Judge—Alex. Morrison, Creemore.								
J. W. Wood, Woodbridge, R.R. 1.	O. A. C. 72	17	24	9	18	22	90	
Jno. McNeil, do R.R. 2	do	16½	23	8	19	22	88½	2,15
A. L. McNeil, do R.R. 2	do	17	21	8	18	23	87	1
Wm. Hawman, Kleinburg	do	16½	21	9	17½	22	86	10
A. Bagg, Edgley	Elmhurst	16½	23	8	18	21½	85*a*	14
J. P. McLean, Woodbridge, R.R. 3	O. A. C. 2	15½	20	9	17	23	84½	1,15
Jno. Thompson, do R.R. 2	do	14	21	8	17	22	82	14
Geo Brownlee, do R.R. 2	Banner	14	20	8	17	22	81	2,1
Jas. Bagg & Sons, Edgeley	Elmhurst	16	21	7	17	21½	80½	*a*
A. Mamock, Woodbridge	Abundance	16	18	8	17	21	80	1
S. Watson, do R.R. 3	O. A. C. 72	13	21	8	15	21	78	14
Alex. McKenzie, do		16	19	8	14	22	77*a*	14,15
Nelson Snider, do R.R. 2	O. A. C. 72	14	16	9	18	20	77	2
Jos. McNeil, Maple	Banner	12½	17	8	18	21	76½	2,15
Geo. Hemphill, Kleinburg	Silver Mine	13	18	9	15	20	73*a*	2,15
Geo. Rountree, Woodbridge, R.R. 2	Banner	13	15	8	16	20	72	2,1

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE.		[20]	[25]	[10]	[20]	[25]	[100]	
NORTH BRUCE AND SAUGEEN AGR. SOCIETY.								
Judge—Geo. Binnie, Priceville, R.R. 2.								
Jos. McKay, Tiverton	Winter King	19	24	9	17	25	92*a*	
Geo. Jamieson, Port Elgin	Dawson's Golden Chaff.	18½	24	8	17	23	90½	12
A. Lamont, do	do do	18	24	8	17	23	90	14
Wm. Meuser, Southampton, R.R. 1	do do	19	20	9	18	23½	89½	1,3
Jno. Baker, Port Elgin, R R. 3	do do	17	24	8	18	22	89	14
C. Sang, Southampton, R.R. 1	do do	17	23	8	18	22	88	3,11
W. Bulger, Port Elgin, R.R. 1	do do	18	20	9	17	23½	87½	14,3
A. Thede, do	Winter King	17½	19	9	19	24	86½	*a*1,14,3,16
W. G. Nicholson, North Bruce	do	17½	22	9	17	22½	86*a*	14,16
S. Sparks, Southampton	Dawson's Golden Chaff	15½	23	8	18	20½	85	16
J. Smith, Paisley, R.R. 4	do do	16	20	9	17	22	84	14,16
J. W. Anderson, Paisley	do do	16½	18	8	18	22	82½	14,3,10
Jas Chazie, Port Elgin, R.R. 3	do do	16	18	8	17	22	81	14,1
L. Cobean, do R.R. 2	Winter King	16	18	9	17	22	80*a*	1,3,14,16
R. Salmon, do R.R	Dawson's G. Chaff.	16	18	8	15	22	79	3,14
G. Cann, do	do do	16	15	8	16	21	76	14,1
TEESWATER AGR. SOCIETY.								
Judge—Geo. Binnie, Priceville, R.R. 2.								
A. & W. McKague, Teeswater, R.R. 1	Dawson's G. Chaff.	18	24	9	19	23½	93½	
T. B. Aitkins, Teeswater, R.R. 2.	do do	18	23	9	18	23½	91½	14
A. Jarvis, do	do do	17½	23	9	18	22½	90	3
Robt. Aitken, do R.R. 2.	do	16	23	9	18	23½	89½	14,16,3
D. McDonald, do	do do	16	24	9	18	22	89	14
S. D. A. A. Stobo, do R R. 3.	do do	16½	22½	8	18	23	88	14,3
Jno. McRae, do R.R. 2.	do do	17½	20	8	18	24	87½	3
W. G. Keith, do R.R. 2.	do do	16	20	8	17	23	84	3,14
D. Keith, do R.R. 2.	Winter King	16	22	9	15	22	82*a*	14,11
J. D. Little, do	do	16	20	9	18	20	81*a*	14,10,1
J. S. Armstrong, Formosa, R.R. 1.	Dawson's G. Chaff.	14½	18	8	18	20	78½	10,11,1
DURHAM.								
MILLBROOK AGR. SOCIETY.								
Judge—Jas. McLean, Richmond Hill, R.R. 1.								
L. H. Winslow, Ida	Dawson's G. Chaff.	16½	23	9	17	20½	86	
T. A. Kelly, Fraserville	do do	16½	20	8	18½	22	85	1,15
D. A. Henry, Millbrook	do do	15	22	7½	17	20½	82	4
W. R. N. Sharpe, Ida	do do	15½	18	9	17	20	79½	9,14,15
Jas. N. McGill, Millbrook	do do	15½	14	6	18	18½	72	1,4,9

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

FALL WHEAT.

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HASTINGS.		[20]	[25]	[10]	[20]	[25]	[100]	
FRANKFORD AGR. SOCIETY.								
Judge—W. H. C. Roblin, Ameliasburg.								
A. Bush, Glen Miller	White	16	20	9	18	19	80	*a*7,10
F. Terry, Frankford, R.R. 1	Red	15	16	9	18	22½	78½	*a*10,4
L. Badgley, Belleville, R.R. 2	White	15½	18	9	17	20	77½	*a*7,10,15
Geo. Nicolson, Frankford	do	14½	18	9	15	20	74½	*a*10,16,4
Jas. Johnston, do	Dawson's G. Chaff.	14	15	8	15	18	70	10,16,7
MIDDLESEX.								
LONDON TP. AGR. SOCIETY.								
Judge—J. J. Virtue, Hampton,								
W. H. Rosser, Denfield	Dawson's G. Chaff.	18	23	10	20	23½	94½	13,14,16
N. Grieves, Ilderton	do	18	25	9	19	23	94	
Peter L. Graham, do	do	17	25	9	19	22½	92½	
H. C. Robson, Denfield	do	17½	24	9	18	23½	92	15
Jas. Smibert, Ettrick	do	18	24	8	19	22½	91½	15
G. E. Sinker, Ilderton	do	17	24	9	18	22	90	15
Donaldson Bros., Ettrick R.R. 1	do	17	24	8½	18	22	89½	
Jno. A. Campbell, Ilderton	do	17	23	9	18	22	89	16
Robt. Morrow, Denfield	Gold Coin	18½	24	8	18	22½	89	*a*
C. W. Hobbs, do	Dawson's G. Chaff.	15½	24	9	18	22	88½	15,14,16
Robb Bros., Ilderton	do	16	23	9	18	21½	87½	16
Jno. McGugan, Denfield	do	15	23	7	16	20	81	13,14
W. T. Whillans, Ilderton	do	13	20	9	18	19	79	
A. B. Kennedy, do	do	14½	23	7	15	19	78½	13
R. Cunningham, Denfield	do	13	20	7	17	21	78	16,1
McGILLIVRAY AGR. SOCIETY.								
Judge—Robt. Berry, St. Mary's, R.R. 1.								
D. F. Coughlin, Centralia	Dawson's G. Chaff.	19½	24	8½	18	24	94	
Jno. Williams, Ailsa Craig	do	19	23	9	18	23½	92½	
Wm. J. Smith, Parkhill	do	18½	20	9	18	24	89½	16,13
D. W. T. Amos, do	do	17½	22	8½	18	22½	88½	15
I. Scott, Ailsa Craig	do	18½	22	9	14	24½	88	16
F. J. Neil, do	do	17	23	8½	15	23	86½	16
J. H. Amos, do	do	18	22	9½	13	23½	86	15,16,14,13
Gibson Bros., do	Gold Coin	18	19½	9	17½	23½	85½	*a*16
A. Erskine, Parkhill	Dawson's G. Chaff.	16	18	8½	18½	23½	84½	13,15,16
J. R Wright, Ailsa Craig	Gold Coin	15	19½	9	18	23½	83	*a*14,13,16
A. W. Stewart, do	Dawson's G. Chaff.	13½	22	6	17	23½	82	14,15
W. J Robinson do	do	16	19½	6	16	21	78½	
J. Dixon, do	do	12	22	7½	17	19½	78	15,16
Jas. E. Amos, do	do	17	18	8	13	21½	77½	16,14,15
J. C. Reid, Parkhill	do	15½	16	9	17½	19	77	13,16,15,14
W. S. Corbett, Ailsa Craig	do	14½	17½	8	16	20	76	16,13,15,14
J. J. Amos, Parkhill	do	15½	16	7½	15	21	75	16,14
Leitch Bros., Ailsa Craig	Gold Coin	14½	19	7	15	21	74½	*a*16,13,15
J. Darling & Son, Parkhill	Dawson's G. Chaff.	15½	15½	7	16	20½	74½	15,14,13

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

FALL WHEAT.

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MIDDLESEX—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
MELBOURNE AGR. SOCIETY.								
Judge—L. G. Pansley, St. Thomas, R.R. 5								
H. A. Fletcher, Melbourne	Dawson's G. Chaff.	18½	24	9	19½	24½	95½	15,14
Mac. McGugan, do	.....	18	23	9	19	24	91	*a*14,15,16
A. Johnson, do	.....	17½	23	9	18½	23½	89½	*a*14,15,16
G. Hyndman, do	.....	17	23	9	18	23	88	*a*15,14
J. Davis, do	.....	17	22	9	17½	23	86½	*a*15,14,16
R. Alexander, do	.....	16	22	9	17½	22	84½	*a*15,14
F. Howe, do	.....	15½	22	9	17½	21	83	*a*15
H. McCrachen, do	.....	15½	22	8	17	17½	80	*a*15,14
J. Sutherland, do	.....	14½	21	8½	17	20	79	*a*15,16
J. Scott, do	.....	14	20	8½	17	18½	76	*a*15,14,16
Wm. Graham, do	.....	13½	20	8	17½	17½	74½	*a*15
Mal. McNeil, do	.....	12½	20	8½	17	17	73	*a*
MOSA AND EKFRID AGR. SOCIETY.								
Judge—R. H. Abraham, Chatham, R.R. 1.								
D. C. Graham, Glencoe	Dawson s G. Chaff.	18	22	9	19½	24	92½	
D. McCallum, do	do	18	21	9	19	23½	90½	
H. Weeks, do	do	19½	16	9¾	19½	24½	89¼	13
D. C. McTavish, Walkers	Crimean Red	18	19	8½	19½	23½	86½	*a*
Wm. Munroe, Glencoe	Dawson's G. Chaff.	16½	18½	9	18	23½	85½	
W. A. McCutcheon, do	O. A. C. 104	17	21	8	18	23	85	*a*
H. McCallum Walkers	Niagara Rice	17½	21	8	17	23	84½	*a*
D. McKellar, Glencoe	Dawson's G. Chaff.	16½	19	9	18	21	83½	
A. McCallum, Walkers	Niagara Rice	17	18	9	18	22	82	*a*
A. Dewar, do	do	15½	19	9	17	21	79½	*a*
D. Mitchell, Glencoe	Early Abundance.	16	18	8	17	22	79	*a*13
J. McRae do	Dawson's G. Chaff.	14½	16	6	18	22	76½	
Wm. Reycroft, do	do	15	17	7	17	20	76	
PERTH.								
KIRKTON AGR. SOCIETY.								
Judge—J. J. Virtue, Hampton.								
D. Rogers, St. Mary's	Dawson's G. Chaff	16½	24	10	18	22	90½	
Jno. Epplett, do	do	17	24	9	18	22	90	
Jas. Moore, do	do	17½	24	8	18	22	89½	
W. Shier, Woodham	do	15	24	9	18	21½	87½	
H. White, St. Mary's	do	14½	24	9	19	20½	87	15
Wm. Arthur, do	do	16	23	9	17½	21¼	86¾	16
Wm. Thompson, do	Reliable Bearded	17	24	9	17	21½	86½	*a*16
C. Atkinson, do	Dawson's G. Chaff.	15	23	8	18	22	86	4
Wm. Hollingshead, do	do	15	24	8	18	20½	85½	15
Jas. Robinson, do	do	15	23	7	18	22	85	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PERTH—*Continued.*		[20]	[25]	[10]	[20]	[25]	[100]	
KIRKTON AGR. SOCIETY—*Con.*								
M. Brethour, St. Mary's	Dawson's C. Chaff.	15	24	8	18	19½	84½	16
A. Bickell, do	do	15	23	7	18	21	84	15
Wm. Harding, do	do	15	20	8	18	21½	82½	16
Robt. Ratcliffe, do	do	14½	22	7	17	21	81½	16,15
Jas. Brown, do	Abundance	15	20	9	17	21	80	*a*4,13
Wm. Denham, do	Dawson's G. Chaff.	15½	20	8	16	20½	80	
Wm. Pringle, do	Abundance	15	18	8	18	22	79	*a*16,14
Wm. Switzer, Science Hill	do	15	17	8	18	20	76	*a*12,15
Hy. Switzer, St. Mary's	do	13½	15	7	17	21	71½	*a*13,12,16
PETERBOROUGH.								
OTONABEE AGR. SOCIETY.								
Judge—W. Hickson, Bobcaygeon								
H. Weir, Lang	Red Clawson	17	23½	8	14	21½	82	*a*
E. C. Foley, Keene, R.R. 1	Dawson's G. Chaff.	15½	17	9	18	22	81½	3,16
M. O'Keefe, do do	do	16½	18	9	16	21	80½	16,4,15
W. A. Nelson, do do	do	15	18	8½	17	19	77½	16,9
S. M. Comrie, Peterboro, R R. 8	Red Clawson	17	21	6	14	18	74	*a*2
Wm. Stewart, Keene, R.R. 2	do	16½	10	8½	19	19½	71½	*a*16,4
R. A. Nelson, do R.R. 1	Mixed	14½	20	8	12	18	70½	*a*10
WATERLOO.								
SOUTH WATERLOO AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
Thos. Young, Galt, R.R. 4	Dawson's G. Chaff.	16½	24	9	19	23½	92	16
R. E. Cowan, do R.R. 3	do	17½	24	8½	19	22	91	15,9
N. Bichtel, Hespeler	do	17½	23½	8	18	23	90	
G. R. Barrie, Galt, R.R. 7	do	16	23	8	19	23	89	14
Wm. Elliott, do R.R. 7	do	18	19	9	19	23½	88½	10,14,15 13,16
Jas. Brown, do R.R. 7	do	15	22	9	19	23	88	10,14,16
J. Brown & Son, do	do	17	21	8	19	22½	87½	16,10,9
Wm. Scott, do R.R. 7	do	15	22	8	20½	21½	87	15
G. P. Moore, o R.R. 7	do	16	22½	7½	19	21½	86½	10,15
M. Scott, do R.R. 3	do	16	22	8	18½	21½	86	9,15,14
W. C. Shaw, Hespeler, R.R. 2	do	15½	21	8½	18½	22	85½	14,15,10
W. Gillespie, Galt, R.R. 5	do	14½	22	8	19	21½	85	15,14,10
T. Copeland, do R.R. 3	do	14½	21	8	18½	22½	84½	16,13,15
J. W. Studeman, Branchton, R.R.1	do	14½	20	8	19	21	82½	15,14
E. Kemkes, do R.R.1	do	13	21	7	19	21½	81½	15,14,16,9
E. G. Hallman, Ayr, R.R. 1	Golden June	16½	19	7½	17½	22½	81	*a*4,14,16, 15,13
A. G. Taylor, Galt, R.R. 7	Dawson's G. Chaff.	12½	21	7	18½	21	80	16.15,14,13
N. Becker, Preston	do	13½	20	7	18	21	79½	1
R. Arthur, Branchton	do	13	19	7	19	20	78	14,15,13,6
W. T. Edgar, Ayr, R.R. 3	Mixed	16	20	8	10	22½	74½	*a*15,14

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

FALL WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
WELLINGTON.		[20]	[25]	[10]	[20]	[25]	[100]	
PUSLINCH AGR. SOCIETY.								
Judge—Jas. Boyd, Markham.								
D. McK. McLean, Puslinch, R.R. 1	Dawson's G. Chaff.	17½	23½	9	19	23	92	15,13
Jno. Walsh, Guelph, R.R. 2	do	17	24	9	18½	22	90½	15,14
D. A. McLean, Puslinch, R.R. 1	Imperial Amber	16½	23½	8½	19	22½	90	9,15
A. McLean, do R.R. 1	do	16	22½	8½	19	23	89	9,15
J. Clark & Son, do R.R. 1	Dawson's G. Chaff.	15½	23	9	19	22	88½	15,8
A. Scott, do R.R. 1	Abundance	16½	23	9½	18	22½	87½	*a*15,13
G. Henderson, do R.R. 1	Imperial Amber	15	24	8	18½	21	86½	15
J. and G. W. Barclay, Guelph, R.R. 6	Dawson's G. Chaff.	13	23	8	18½	22	84½	9,15,14
P. J. McLean, Puslinch, R.R. 1	do	15½	20	8	18½	21½	83½	11,14,15,9
J. A. Coburn & Son, do R.R. 1	O. A. C. 104	13½	21	8	19½	21	81	*a*2,15,14
H. McCaig, Hespeler, R.R. 2	White Jewel	14	21	7½	18½	21½	80½	*a*10,15
C. Currie, Morriston	Mongal	15	18	8	17	21½	77½	*a*15
T. Foley, Puslinch, R.R. 1	Abundance	15	18	9	14	22	76	*a*12,4,13, 15,9,2
YORK.								
WOODBRIDGE AGR. SOCIETY.								
Judge—J. N. McGill, Millbrook.								
J. A. McNeil, Woodbridge	American Banner	18	24	8½	19	22½	90	*a*15
W. E. Watson, do	O. A. C. 104	17½	24	8½	19	22	89	*a*4,9
R. L. Robertson, do	Winter King	16½	21	8½	18½	22½	85	*a*4,15
F. McClure, Weston, R.R.	do	16	21	8	18	22¼	83½	*a*10,5,12
W. T. Dobson, Clairville		16	23	7½	15	22½	82	*a*13,4
W. W. Farr, Woodbridge	American Banner	13½	23	8½	17½	21	81½	*a*16,9,15
B. Wildrick, do	Winter King	15½	20	9	18	20½	81	*a*11,4,9
R. Wilson, do	do	14½	22	8	17	21	80½	*a*16,9
D. McKinnon, do	do	15	22	8	16½	20	79½	*a*15,16
J. W. Wallace, do	Wood's Wheat	14½	15	7	18	21	73½	*a*1
Cousins Bros., do	do	14	14	8	18	21	73	*a*10,1

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
CARLETON.		[20]	[25]	[10]	[20]	[25]	[100]	
FITZROY AGR. SOCIETY.								
Judge—M. J. Casselman, Morrisburg.								
F. R. Gourlay, Kinburn	Marquis	18	23	9½	16	23	89½	
M. Moldoon, Galetta	do	17½	19	8½	19	21½	85½	10,15
R. W. J. Gourlay, Kinburn	do	17	17	8	17	20½	79½	4,10
E. H. Miller, Galetta	do	15	20	8	15	20½	78½	
W. T. Smith, do	do	18	20	8	12	19½	77½	
A. J. Halpenny, do	White Fife	15½	20	7	14	19½	76	
A. L. Riddell, Kinburn	do	18	15	8½	14	19½	75	
E. O. Wilson, do	Marquis	13	19	6	16	19½	73½	4,15
LEEDS.								
LANSDOWNE AGR. SOCIETY.								
Judge—S. E. Kidd, Burritt's Rapids.								
A. W. Landon, Lansdowne	Marquis	18¾	22½	8½	18½	23½	91¾	4,10,12,14
Geo. A. Loney, do	White Fife	18½	23	9	18	23	91¼	10,13
T. Steacy do	Marquis	18½	22	8	18	23	89½	4,12,10
M. A. Kyes, do	Goose	18	21	9	18	21½	87½	13,4,10
D. B. Johnston, do	Marquis	16	20	9	18	22½	85½	4,10
R. W. Landon, do	do	15	20	8	18	22½	83½	4,10,14
J. M. Ferguson, do	Red Fife	15½	18	8	18½	22	82	4,10
T. McRae, do	Marquis	14½	18	9	18	22	81½	
G. S. Ruttle, do	do	16	23	9	10	23	81	10,4
PARRY SOUND.								
McMURRICH AGR. SOCIETY.								
Judge—J. B. Kaye, Bracebridge.								
P. J. Farrell, Sprucedale	Marquis	17	23	8½	19	20½	88	15
W. J. Fowler, do	do	17	23	9	17	21½	87½	15
Marshall & Son do	do	17	22	9	17	20½	85½	14,15,17
W. E. Pearce, do	do	15½	20	9	16	20½	81	
C. Stewart, Doe Lake	do	15	20	8	17	19	79	15
Hy. Watson, Sprucedale	do	15	18	9	16	18	76	15,13
S. Watt, do	do	14	20	8	15	18	75	15
A. Foeller, do	do	13	22	7	16	16	74	15,17
J. Downes, do	do	12	22	8	15	16	73	10,15,14
C. Farrell, do	do	13½	18	8	15	18	72½	4,15,3,10

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PETERBOROUGH.		[20]	[25]	[10]	[20]	[25]	[100]	
PETERBOROUGH IND. AGR. SOCIETY.								
Judge—Harry E. Redner, Rednersville.								
J. D. Fowler, Peterborough, R.R. 4	Poor Man's Friend	14½	24½	8	20	21½	86½	*a*15
F. Staples, Monaghan	Marquis	15½	23	8	18	21½	86	11,15
R. A. Garbutt Peterborough, R.R. 4	Poor Man's Friend	16½	23	8	19	21	85½	*a*
A. B. Mann, do R.R. 4	Marquis	16½	23	9	15	21	84½	
J. T. O'Connell, do	do	14½	23½	7½	19½	19	84	4,15
G. Mann, do	Colorado	16	23½	8	15	20½	81	*a*15
W. M. Steinkraus, do R.R. 8	Marquis	14	22	7	17	20½	80½	
PRESCOTT.								
ALFRED AGR. SOCIETY.								
Judge—Geo. R. Bradley, 152 Third Ave., Ottawa.								
Xavier Chenus, Plantagenet	Huron	18	24	8½	20	22½	91*a*	
A. Charbonneau, Alfred	Marquis	17½	23	8	19	22	89½	
S. Parisien, do	White Fife	17½	18	8½	19	24	87	8,15,12
E. Parisien, do	Marquis	17½	20	8½	19	21½	86½	4,15
J. Gascon, do	Red Fife	18	22	7	18½	20½	86	15,4
D. Charbonneau, do	Marquis	16½	22	7½	19	20½	85½	10
F. Provost, Plantagenet	do	17½	18	8½	18	22½	84½	8,15
A. Daoust, Alfred	White Fife	16½	18	9	18	22½	84	4,8,15
J. Parisien, do	Marquis	15½	20	8	17	21	81½	12,15
F. X. Cardieux, L'Orignal	do	15½	20	8	17	20	80½	4,15
M. Leroux, Plantagenet	Black Sea	15½	20	8	17	21½	80	*a*15
J. Brisebois, Alfred	White Fife	16	18	8	17	20	79	15,4
A. Landriault, do	do	16½	15	9	17	21	78½	4,15
J. Robillard, do	Marquis	15½	20	7	16	19½	78	15,12
M. Villemaire, do	White Fife	16	18	8½	15	19½	77	4
A. Langon, do	do	14	18	7½	18	18½	76	4,15,12
A. Laroux, Plantagenet	Red Fife	15	16	7½	16	19½	74	15,5
S. Chartrand, Alfred	White Fife	14½	16	7½	16	19	73	15
F. Daoust, do	do	15½	12	8	15	20	70½	4,15
RENFREW.								
COBDEN AGR. SOCIETY.								
Judge—J. H. Wiggins, Kemptville, R.R. 4.								
W. Burns, Cobden, R.R. 3	Marquis	16	23	7	18	22	86	
W. McMillan, do R.R. 6	do	14	21	8	18	21	82	
S. McLaren, do	do	14	18	8	18	21	79	
L. McBride, do	do	13	20	8	17	20	78	
L. Cropley, do	do	15	20	7	17	17	76	
A. Johnston, Bromley	do	14	20	8	15	18	75	15
T. Smith, Cobden, R.R. 3	do	13	18	7	17	19	74	
E. Kenny, Pembroke	do	14	18	7	17	17	73	
J. Eckford, Cobden, R.R. 3	do	13	16	8	17	17	71	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

SPRING WHEAT.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
TEMISKAMING.		[20]	[25]	[10]	[20]	[25]	[100]	
NEW LISKEARD AGR. SOCIETY.								
Judge—G. A. Williams, 201 Gordon St., Guelph.								
B. Irvine, Hanbury	Marquis	18½	24	9	18	23½	93	
Jno. Philip, New Liskeard, R.R.1	do	17	23	9	19	20½	88½	
S. Jewell & Son, do	do	16	23	7	17	22	85	
E. Jibb, do R.R. 1	do	14	22	8	18	18	80	
J. M. Gray do	do	18	10	8	18	22½	76½	1
C. Hurd, do R.R. 2	do	14½	21	8	10	19	72½	
E. Maille, do	do	16	10	9	16	20	71	
YORK.								
MARKHAM AGR. SOCIETY.								
Judge—A. J. Thomson, 74 Annette St., Toronto.								
I. Cox, Unionville, R.R.	Marquis	12½	23	6	17	18½	77	
J. Torrance, Markham	do	13½	15	5	15	21½	70	1,11

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

BARLEY.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	†Weeds in competitors' fields.
BRANT.		[20]	[25]	[10]	[20]	[25]	[100]	
ONONDAGA AGR. SOCIETY.								
Judge—J. A. McDermid, Collingwood, R.R. 2.								
D. B. Campbell, Cainsville, R.R. 2	O. A. C. 21	15	20	8	19	20½	82½	
A. W. Vansickle, Onondaga	do	15	19	8	18	20	80	
T. Thompson, Cainsville, R.R. 1	do	14½	20	8	18	18	78½	15
G. E. Wood, do R.R. 1	do	14	19	7	16	16	72	
Hy. Preiss, do R.R. 1	do	13	17	8	17	16	71	
A. W. Pate, Paris	do	13½	19	7	17	14	70½	14
BRUCE.								
EASTNOR AGR SOCIETY.								
Judge—J. W. Patton, Rocklyn, R.R 2.								
H. Hellye, Lion's Head	O. A. C. 21	17½	23	9	18	22	89½	
J. Fowlie, do R.R. 1	do	16½	25	8	18	20½	88	
J. Dawson, do	do	15½	22	8	16	19½	81	
A. Mielhausen, do	do	15	25	8	13	19	80	
J. A. Bray, do	do	15	22	8	14	20½	79½	
W. J. Bray, do	do	13½	22	9	15	19½	79	
C. R. Rutherford, do	do	16	21	7	16	18	78	1
J. R. Cook, do	do	15	24	7	12	18	76	
F. Bain, do	do	13½	17	7½	17	19	74	
DUNDAS.								
MOUNTAIN AGR. SOCIETY.								
Judge—E. K. Hampson, Kemptville.								
Wm. Cleland, South Mountain	O. A. C. 21	17½	18	8	17	23	83½	15
R. K. Graham, do	do	18	20	8	16½	20	82½	2,15
W. J. Flegg, Brinston	do	18½	16	8	19	20½	82	15,2
S. D. Thorpe, South Mountain	do	16¼	20½	9½	15	19¾	81	10,15
Jas. Graham, do	do	16	19	8½	16	19	78½	15
HALTON.								
HALTON AGR. SOCIETY.								
Judge—J. A. McDermid, Collingwood, R.R. 2.								
D. F. Ford, Milton,	O. A. C. 21	14½	20	8	18	15	75½	
Jas. Widderburn, do R.R. 4	do	14	20	8	16	14½	72⅔	15
G. Agnew, do R.R. 6	Mandscheuri	13½	18	8	18	14	71½	

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

BARLEY.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from smut, blight and insects.	Freedom from other varieties and other kinds of grain.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
PEEL.		[20]	[25]	[10]	[20]	[25]	[100]	
ALBION AND BOLTON AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
Geo. Downing, Bolton, R.R. 2	O. A. C. 21	16	20	8	16	17½	77½	14
B. Bishop, do R.R 1	Mandscheuri	16½	17	8½	17½	17½	77	15,4,14
R. See do R.R. 4	O. A. C. 21	14½	23	8	15	14½	75	15
SIMCOE.								
NOTTAWASAGA AND GT. NORTHERN AGR. SOCIETY.								
Judge—R. E. Mortimer, Honeywood.								
I. L. Aitkins, Creemore, R.R. 2		16	15	9	17	16	71	*a*
A. Morrison, do R.R. 2	O. A. C. 21	15½	17	7	16	15	70½	1,15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

ALSIKE CLOVER.

Competitors in Order of Merit.	Apparent yield and quality of crops indicated by: Height of crop.	Closeness of plants.	Vigor and healthy appearance of plants.	Evenness of crops over field.	Number of well-filled heads per plant containing plump seed of good color.	Freedom from noxious weeds mentioned in Seed Control Act.	Freedom from other weeds, grasses, etc.	Favorable conditions for harvesting the crop, absence of loose stones, etc.	Totals of scores.	
KENORA.	[15	[15]	[5]	[10]	[15]	[25]	[10]	[5]	[100]	
DRYDEN AGR. SOC.										
Judge—A. B. Jackson, Elmira.										
John McKay,, Dryden..	13½	13½	4½	8	13	25	7	5	89½	
J. Adams, Oxdrift..	13½	12½	4½	8	13	25	7½	5	89	
T. H. Lewis do ..	13	13	4½	8	13	25	7	5	88½	
W. Devoe, do ..	13	12½	4	8½	12½	25	7½	5	88	
A. J. Gardiner, Eagle River.....	13	12½	4	8	12½	25	7	5	87	
W. D. Neely,Oxdrift	13	12	4	7	13	25	7½	4½	86	
E. W. Wice,Dryden	12	12	4	7	13	25	7½	5	85½	
J. Spalding,Oxdrift..	14	14	4½	8	13	20½	6	5	85	
D. G. McKenzie Eagle River.....	14	13	4	8	12	11	6	5	73	
WENTWORTH.										
BINBROOK AGR. SOCIETY.										
Judg—A. Forster, Markham.										
Robt. Young, Glanford, R.R. 1.....	14½	14½	4½	8½	13	22½	9	4½	91	15
Ed. Duffy, Glanford, R.R. 1	14½	13½	4½	8½	13	22	8½	4½	89	15,14
W. J. McEvoy Glanford R.R. 1..	15	13	4	8	12	19	8	4½	83½	14,13
Jas. McAllister, Glanford, R.R. 1..	14	12	4	7½	10	21	8	4½	81	14,15,8
N.Switzer, Glanford, R.R. 1.....	13	12	4½	5	11	21	8½	4½	79½	8,2
S. Switzer, Glanford, R.R. 1.....	13	12	4½	6	11	20	8	4½	79	14,8,13
Ed. Laidman, Glanford R R. 1.....	12	10½	4	7	10½	21½	8½	4½	78½	15,14,8
R. Tisdale.....	12	11	4½	8	12	17	8	4	76½	15,14, 13,2,8

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

PEAS.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from weeds.	Freedom from disease and insects as mildew, blight, weevil, worms, etc.	Purity of variety.	†Yield and quality of grain.	Totals of scores.	‡Weeds in competitors' fields.
BRUCE.		[20]	[15]	[20]	[15]	[30]	[100]	
EASTNOR AGR. SOCIETY.								
Judge—J. W. Patton, Rocklyn, Ont., R.R. 2.								
James Prescott, Lion's Head	Golden Vine	18½	14	17	14	28½	92	
A. Mielhausen, do	do	18½	14½	17	14	27	91	
R. Cameron do	do	16½	14	18	14	26½	89	
J. A. Bray, do R.R. 1.	do	17	14	18	14	25½	88½	
J. A. Dickie, do	do	16	15	18	14	25	88	
J. Fowlie, do	do	17½	12	19	14	25	87½	14
J. Walpole, do	do	14½	15	19	14	24	86½	
A. P. Bray, do	do	16½	15	16	14	24½	86	
A. Slocum, do	do	15½	13	18	14	25	85½	
W. J. Bray, Jr., do	do	14	12	17	14	25	82	14
B. Bray, do R.R. 1	do	15½	15	14	14	23	81½	
C. R. Rutherford, do R.R. 1	do	14½	10	18	12	24	78½	1,14
F. Cameron, do	do	14½	10	16	14	23	77½	
H. Hillyer, do	do	14	12	15	13	22	76	
RENFREW.								
RENFREW AGR. SOCIETY.								
Judge—S. G. Gourlay, 91 Second Ave., Ottawa.								
David Barr, Jr., Renfrew	Arthur	18	13	17	15	25	88	
J. B. McLaren, do	do	18	13	17	15	24	87	
W. McGregor, do	Golden Vine	18	13	17	14½	24	86½	
L. Galbraith, Northcote	Arthur	18	13	17	14	24	86	
J. Humphries, Renfrew	do	17½	13	16	14	24	84½	
G. McIntyre, do	do	16½	13	16	14	23½	83	
J. M. Airth, do	do	15½	12	16	14	22½	80	
Wallace Bros. do	do	15	11	15	13	22	76	
P. Hamilton, do	do	15	11	15	13	21½	75½	

*General appearance—Considering stand of crop, type of plant, vigor and uniformity of growth and method of seeding.

†Yield and quality of grain—Considering number and size of pods per plant, uniformity of maturity and proportion of grain to straw.

‡See key page.

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
BRUCE.		[20]	[5]	[20]	[15]	[40]	[100]
LUCKNOW AGR. SOCIETY. *Judge—Robt. Berry, St. Marys, R.R. 1.*							
Jno. McLeod, Lucknow, R.R. 5	Leaming	78	3½	17	15	35½	87*a*
Wm. Webster, do	do	17	5	18½	15	32	85½*a*
Joseph Colling, Ripley, R.R. 1	White Cap	16	5	19½	15	29½	85
F. G. Todd, Lucknow, R.R. 2.	Leaming	17½	4	15½	15	34	84*a*
Hugh Rutherford, do R.R. 2.	do	17	5	16	15	32½	83½*a*
John Webster do	do	16	5	18	15	29½	81½*a*
W. E. Henderson, do	do	17½	4½	14	15	28	77*a*
R. J. Button, do	do	16	4	14	15	29½	76½*a*
E. M. Aitchison, do R.R. 2.	do	14½	5	16	15	27½	76*a*
Wm. Rutherford, do R.R. 2.	do	16	4½	9	15	31½	74*a*
Joseph Taylor, do R.R. 2.	do	16	4½	14	15	25	72½*a*
Wm. McQuillin, do	do	17	4½	15	15	22	71½*a*
CARLETON. CARP AGR. SOCIETY. *Judge—J. H. Wiggins, Kemptville, R.R. 4.*							
W. Rivington, Carp	Golden Glow	17	4	19	14	36	90
F. S. Caldwell do	do	17	4	17	14	37	89
G. Rivington, do	do	17	4	17	14	36	88
G. Caldwell, do	Wisconsin, No. 7	17	4	15	14	37½	87½
G. A. Hodgins & Son, Carp	Golden Glow	16	4	19	12	36	87
D. Scharf & Son, Stittsville, R.R. 2	Wisconsin	16	4	17	14	35	86
W. J. Johnston, Carp	Golden Glow	16	4	17	14	34	85
E. H. Graham & Son, do	White Cap, Yel. Dent	16	4	17	14	30	81
J. H. Wilson, do	Golden Glow	14	4	16	13	32	79
Levi Black, Stittsville R.R. 2.	White Cap Yel. Dent	13	3	17	14	27	74
W. J. Cavanagh, Carp	Wisconsin	12	3	14	12	29	70

*General appearance—Considering uniformity and stand of crop, type of plant, and vigor of growth, and method of planting.

†Yield of fodder and grain—Considering quality and quantity of fodder, type as regards size, shape and yield of ears, size and depth of kernels, variety considered.

a Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
DURHAM.		[20]	[5]	[20]	[15]	[40]	[100]
CLARKE TP. AGR. SOCIETY.							
Judge—H. L. Tisdale, Brampton, Box 478.							
F. W. Rickard, Newcastle	White Cap	17	4½	18	15	37	91½
C. A. Chapman Orono	Wisconsin No. 7	17	5	19	15	35	91
I. T. Chapman, Bowmanville	do	17	5	18	15	35	90
C. L. Powers, Orono	do	17	5	17	15	35	89
G. N. Powers, do	Bailey	17	5	17	15	34½	88½
J. D. Brown, do	Wisconsin No. 7	16½	5	17	15	31	84½
A. J. Tamblyn, Bowmanville	Bailey	16½	5	15	15	32	83½
W. S. Moffatt, Orono	Imp. Leaming	16½	5	13	15	34	81½*a*
G. Wright, do	Wisconsin No. 7	16	5	13	15	32½	81½
S. Daweson, Bowmanville	White Cap	16	5	13	15	32	81
A. Gibson, Orono	Imp. Leaming	16½	5	14	15	32	80½*a*
D. Moffatt, do	do	14½	5	17	15	31	80½*a*
Jno. Henry, Kendal	Wisconsin No. 7	14½	5	13	15	27	74½
WEST DURHAM AGR. SOCIETY.							
Judge—H. L. Tisdale, Brampton, Box 478.							
S. E. Werry, Hampton, R.R. 1	Wisconsin No. 7	18½	5	20	15	37½	96
R. E. Osborne, Bowmanville, R.R. 2	North Dakota	18	5	20	15	37	95
J. F. Osborne, Newcastle	Wisconsin No. 7	18½	4½	20	15	36½	94½
A. W. Annis, Tyrone	Golden Glow	17	5	18	15	35	90
A. H. Allin, Bowmanville, Box 142	Wisconsin No. 7	18½	5	17	15	34	89½
R. J. Gill, do R.R. 4	do	17½	4½	18	15	34	89
J. Baker, do R.R. 1	do	16½	5	19	15	33	88½
R. R. Stevens, do R.R. 3	Mixed	17	5	17	13½	35	85½*a*
Alan Campbell, do R.R. 2	Bailey	17	5	16	15	32	85
J. D. Stevens, do R.R. 3	Mixed	18	4½	17	13	34	84½*a*
D. J. Gibson, do R.R. 4	Wisconsin	15½	5	15	15	34	84½
Blake Courtice, Courtice	Wisconsin No. 7	15	5	15	15	33	83
Chris. Cox, Bowmanville, R.R. 4	Mixed	17	5	12	13	36	81*a*
ELGIN.							
ALDBOROUGH AGR. SOCIETY.							
Judge—Jas. Boyd, Markham.							
J. A. King Wardsville	W. C. Y. Dent	16½	3½	19	15	37½	91½
J. J. Johnston, do	do	17	3½	18	14½	38	91
R. A. Kerr, Rodney	Wisconsin No. 7	17½	4	18	13½	37½	90½
H. Hessenauer, Rodney	Bailey	18	4½	16	14	37½	90
Roy Blain, Wardsville	W.C.Y. Dent	16½	3½	18	13½	38	89½
James Downie, Rodney	Longfellow	17	4½	19½	14	34	89
D. A. Purcell & Son, Wardsville	W.C.Y. Dent	16	3	18	15	36	88
J. F. McGregor, do	do	15	4	18	14	36½	87½
E. J. Purcell, do	do	15½	3½	17	14	37	87
A. Wehlann Rodney	do	16	3	16	14½	37	86½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	Yield of fodder and grain.	Totals of scores.
ELGIN—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
ALDBOROUGH AGR. SOC.—*Con.*							
W. Campbell & Son, Wardsville	W.C.Y. Dent	16	3	15	14½	37½	86
W. W. Havens Rodney	Wisconsin No 7	15½	4	16½	14	35½	85½
A. J. Leitch, Wardsville	W.C.Y. Dent	15½	3½	16	14	36	85
H. H. Johnston, do	do	16	4	14½	14	36	84½
M. W. Purcell, do	do	15½	2	16	12½	37½	83½
S. King, do	do	16	3	14½	14	35½	83
A. Scott do	do	13½	3	17	14	35	82½
B. Buchan, Rodney	Strawberry Dent	16	4	16	10½	37½	82*a*
J. A. Lamont, Wardsville	W.C.Y. Dent	14	3½	16	13½	35	82
Bert Johnston do	do	14	4	13	14	36½	81½
John Ashton, Rodney	do	14	3½	16	13	34½	81
Wm. Leverton, Wardsville	do	15	3	16	13	33½	80½
D. F. McLean, do	do	14	2	15	14	35	80
Archie McColl, Rodney	Wisconsin No. 7	13	3	15	14	34½	79½
A. Purcell, Wardsville	W.C.Y. Dent	16½	3	12	10	37	78½
E. Huffman, Rodney	do	12	3	15	13½	34½	78
W. A. Kelly, do	8-Rowed Yellow	14	3½	15	10	36½	77*a*
L. Winger Wardsville	W.C.Y. Dent	12	4	13	14	33	76
R. Anthes, Rodney	Longfellow	12½	3	17	11	32	75½
Whitney Kelly, do	White Flint	14	3½	17	10	32	74½*a*
WEST ELGIN AGR SOCIETY. *Judge—A. J. Thomson, 74 Annette St. Toronto.*							
Ezra Bedford, Wallacetown	Longfellow	17	4½	16	13	33	83½
J. A. Page, do	do	17	4	16	13	32	82
A. D. McKillop, do	W.C.Y. Dent	18½	4	10	13	34½	80
Jas. Trothen, do	Longfellow	15	3½	13	13	29½	74
F. E. Smith, do	W.C.Y. Dent	15	3½	15	13	27	73½
E. V. Docker, do	Longfellow	15	3½	13	12	29	72½
Stewart Pearce, do	do	12½	4	13	13½	27	70
ESSEX.							
AMHERSTBURG, ANDERDON AND MALDEN AGR. SOCIETY. *Judge—Wm. A. Kelly, Rodney, R.R. 2.*							
Ed. Deneau, North Malden	Wisconsin	18½	4½	19½	15	37	94½
Thos. Deslippe, Amherstburg, R.R. 1	do	18	4	19	15	37	93
M. Deneau, North Malden, R.R 1	do	17½	4	19	15	37	92½
R. Langlois, do R.R 1	do No. 7	18½	4	18½	14½	36	91½
E. Langlois, Amherstburg	do do	18½	4	18	14½	36	91
F. Pigeon, North Malden	do	17	3½	18½	14½	37	90½
Ed. Deslippe, do R.R. 1	do	18	4	17	14½	36½	90
Wm. Bailey do	do	18½	3	19	14½	34½	89½
W. Anderson, Amherstburg, R.R. 2	Bailey	18	3½	16½	15	36	89
F. Pettypiece, Auld	Leaming	17½	3½	9	13½	37	88½*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
ESSEX—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
COMBER AGR. SOCIETY.							
Judge—Wm. A. Kelly, Rodney, R.R. 2.							
Thos White, Staples	Gold Medal	18½	4½	20	15	38	94*a*
Robt. Truskey, do	do	18	4½	20	15	38	93½*a*
Wm. H. White, do	do	18½	4	19	15	38	92½*a*
A. Caza, Tilbury, R R. 4	Bailey	18	4	18	14	37	91
T. W. Taylor, Comber	do	18	4	18	14	36½	90½
Wm. Elliott, Staples	do	16½	4	17	14	36½	88
Morris Bros., Tilbury, R.R. 4	do	17½	3	16½	14	36½	87½
R. B. Keith, Comber	Leaming	16½	4	18	14	36½	87*a*
W. D. Elliott, Comber, R.R. 1	Bailey	15	3½	18	14	36	86½
H. Smith do	do	15	4	17½	14	35	85½
J. S. Ainslee, do	Leaming	17	4	16	14	36	85*a*
FRONTENAC.							
KINGSTON IND. AGR. SOCIETY.							
Judge—E. K. Hampson, Kemptville.							
A. Day, Portsmouth, R.R.	Imp. Leaming	17½	5	18	15	35	88½*a*
T. Doyle, Kingston Mills, RR.1	W.C.Y. Dent	16	5	19	15	31	86
W. P. Franklin, do R.R.	do	16½	5	17	14	32	84½
J. Henderson & Son, Portsmouth	Imp. Leaming	16	5	16½	15	31½	82*a*
J. D. Morris do	Mixed	17	4¾	14	12	32	77¾*a*
Jas. Baxter, Kingston, R.R. 1	do	15	5	17½	10	30	75½*a*
W. J. Hunter, Kingston Mills	do	15	5	17	15	24	74*a*
C. E. Walker, Portsmouth	Leaming	13	5	16	15	26	73*a*
F. J. O'Neil, do	Mixed	12½	5	16	12	28	71½*a*
C. A. Kincaid, Kingston Mills	S. Sweet	14½	4¾	8	15	31	71¼*a*
GREY.							
HOLLAND AGR. SOCIETY.							
Judge—W. Hickson, Bobcaygeon.							
Jno. McKenzie, Chatsworth, R.R. 3	W.C.Y. Dent	18	4	20	15	36	93
J. B. McDonald, do R.R. 3	do	18	4	20	15	35½	92½
Chas. Finn, do	do	18	3½	19	15	36½	92
W. M. Sutherland, do R.R. 4	do	18½	4½	18½	15	35	91½
W. S. Milson, do R.R. 3	do	18	3½	19½	15	35	91
W. J. Carson, do	do	18½	4	19	15	34	90½
Thos. McDonald, do R.R. 3	do	18½	5	16	15	35	89½
Wm. McCoomb, do	do	17½	4½	16	15	33½	86½
S. Northey, do R.R. 5	Wisconsin No. 7	18	4	15	15	34	86
W. J. Hamilton, Owen Sound, R.R. 4	W C.Y. Dent	17½	3½	15	15	34	85
R. T. McCoomb, Chatsworth	Leaming	18½	4½	16½	15	31	83½*a*
Geo. Carrie, do R.R. 4	W.C.Y. Dent	17	4	16	15	30	82
Russel Rannage, do R.R. 3	do	15½	5	19½	15	24	79

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
GREY—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
KILSYTH AGR. SOCIETY. *Judge—Jas A. Cameron, Weston.*							
A. Thompson, Owen Sd,, R.R. 4	Ensilage	19½	5	20	14½	38	97
O. Smith do R.R. 4	do	19½	4½	19½	14½	38	96
A. S. Donald, Tara, R.R. 5....	do	19½	4½	20	14½	37	95½
B. Porteous, Owen Sound, R.R3	do	19	4½	20	14½	37	95
M. Lynn, do R.R. 3	do	19	4	20	15	36	94
H. Breen, Tara, R.R. 5.....	do	18	3½	20	14½	37	93
G. P. Kennedy, do R.R. 5...	do	16	5	20	14	37	92
A. Fleming do R.R. 5...	do	18	4	20	13½	36	91½
W. H. Marshall, Owen Sound, R.R. 5.....	do	16½	5	20	14	33	88½
R. S. Mundle, do R.R. 3	do	16½	4	19	13	35	87½
A. Herron, Tara, R.R. 5.....	do	16	4½	17	14	33½	85
V. Barber, Owen Sound, R.R. 4	do	15½	5	20	12	32	84½
T. H. Elliott, do R.R. 5...	do	14	5	19	13	32	83
G. Wyllie, Kilsyth.....	do	14	5	17	12	33	81
I. McInnis, Owen Sound, R.R. 4	do	13	4	17	13	33	80
Geo. Sargeant, do R.R. 3	do	15	4	10	12	31	72
WALTER'S FALLS AGR. SOCIETY. *Judge—W. Hickson, Bobcaygeon.*							
John Thorn, Walter's Falls....	Wisconsin No. 7....	18½	4½	20	15	33½	91½
G. I. Reid, Goring.....	do	19	4½	17½	15	35	91
C. DobsonChatsworth, R.R. 5	do	18	4½	20	15	33	90½
R. Quinton, Walter's Falls....	do	18½	4	20	15	32½	90
R. A. Hanna, do	Golden Glow.....	18½	4½	18	15	33½	89½
J. Murray, Markdale, R.R. 3..	Wisconsin No. 7....	17½	5	17	15	33½	88
D. Reid, Chatsworth, R.R. 5..	W.C.Y. Dent.....	18	4½	18	15	30½	86
L. Shepherdson, Markdale, R.R. 3.....	Wisconsin No. 7....	18	4½	15	15	33¼	85¾
W. T. Henry, Chatsworth, R.R. 5	W.C.Y. Dent.....	17½	5	14	15	34	85½
Wm. Reid, do R.R. 2	Leaming.....	18	5	18	15	29	83*a*
R. Howay, do R.R. 5	do	18½	5	1	15	29	80½*a*
HASTINGS. STIRLING AGR. SOCIETY. *Judge—E. K. Hampson, Kemptville.*							
T. J. Thompson, Stirling, R.R. 1	Wisconsin No. 7....	18¾	5	17	14½	36½	91¾
K. I. Sine, do R.R. 1	Golden Glow.....	17½	4½	18½	14	36½	91
A. B. Fargey, do R.R. 2	Wisconsin No. 7....	18¾	4¾	18	14	35½	90¾
M. Shea, do R.R. 2	Bountiful..	18½	5	19	15	35	90½*a*
G. N. Wilson, do R.R. 3	Golden Glow.....	17	5	17½	15	34½	89
G. F. Cooke, do R.R, 2	Bailey, Longfellow..	18¼	4½	17½	14	34½	88¾
R. Heath, do R.R. 2	Leaming.....	18¾	5	18	15	33½	88¼*a*
A. Bush, do R.R. 1	Wisconsin No. 7....	16¾	5	18	15	29	83¾

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
HASTINGS.—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
STIRLING AGR. SOC.—*Con.*							
C. Thompson, Stirling		15½	5	16	15	31	82½
Earl Morrow, do	Wisconsin No. 7	16½	5	15½	15	30	82
R. Walker, do R.R. 1	Mixed	15¼	5	17	13	33	81¼*a*
Edgar Morrow, do R.R. 1	Wisconsin No. 7	15	4½	17	15	29	80½
W. Heath, do R.R 1	do	14½	5	16	15	30	80½
Geo. Thompson, do R.R. 1	W.C.Y. Dent	13	5	16	15	28½	77½
J. A. Bailey, do	Wisconsin No. 7	13½	5	16½	15	24½	74½
C. M. Sine, do R.R. 1	Bailey	12	4	16	13	29½	74½
C. U. Heath, do	Wisconsin	13	5	14	15	27	74
HURON.							
EAST HURON AGR. SOCIETY.							
Judge—Robt. Berry, St. Mary's R.R. 1.							
Thos. Miller Brussels	Wisconsin No. 7	17	3	19	15	35½	89½
E. Hoover do	Dent	17	4½	19	15	31½	85*a*
E. R. Knight, do	do	16	4½	17	15	29½	80*a*
O. Turnbull & Sons, do	do	15½	5	19	15	27	79½*a*
J. Bolger, Walton	do	16	3	17	15	30	79*a*
J. Oliver, Brussels	do	16	4½	17½	15	27	78*a*
J. Moses, do	do	17	4	11	15	25	70*a*
KENT.							
EAST KENT AGR. SOCIETY.							
Judge—R H. Harding Thorndale.							
Percy Secord, Thamesville R.R.	Bailey	19½	4½	18	14	39½	95½
J. Buchanan do	Wisconsin No. 7	19½	2	20	15	38½	95
W. Snary, do	W.C.Y. Dent	18½	3	20	15	38	94½
W. Cameron, Thamesford	do	19	4½	18½	14	38	94
R. L Barker, Thamesville	Bailey	18	4	19	15	37½	93½
S. Holmes, Northwood	W.C.Y. Dent	19	4	19	14½	36	92½
D. Winters do R.R. 3	do	18	4½	18	14½	37	92
Geo. Clark Thamesville	do	19	4	19	14	35	91
D. Buchanan, do	Wisconsin No 7	16	3	19	15	37½	90½
J. Winters, do	W.C.Y. Dent	17	4	18½	14	36½	90
C. Baxter, do	do	16	4½	18	15	35	88½
A. Dick, do R.R. 4	do	18½	4	16	14	35½	88
S Wardell, do	do	17	4	19	15	32	87
B. Street, do R.R. 4	do	17	4	18	14	34	87
J. W. Leeson, do	do	18	3½	15	15	35½	87
H.F.Heth'ringt'n, do	do	16½	3	19	15	33	86½
T. Cameron, do	do	17½	4	17½	14	33	86
J. Buchanan, do	Wisconsin No. 7	16½	3	15	15	36	85½
L. D. Hubbell, do	do	16	4	13½	15	33	81½
R. J. Shankie, do R.R. 6	W.C.Y Dent	14	3	16	15	33	81
P. Cameron, do	do	16	3	12	14	35½	80½
J C. Harris, do R.R. 2	do	14	3	17	15	30	79
Thos. J. Daly, do	do	13	3½	12	14	29½	72

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
KENT.—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
HARWICH AGR. SOCIETY.							
Judge—G. A. Williams, 201 Gordon St., Guelph.							
Mac. Maynard, Chatham, R.R. 3	Golden Glow	19	4½	19	15	37½	95
J. D. McPherson, Blenheim	Wisconsin	18½	4½	18	15	37	93
L. Campbell, do R.R. 4	Bailey	18	4	18	15	36½	92
R. J. Wilson, Charing Cross	Wisconsin	18½	3½	18	15	36	91
T. Pegg, Blenheim,	do	18	4½	16	15	37	90½
E. Mallory, do R.R. 2	Bailey	17½	4½	18	15	35	90
J. Clayton, do R.R. 4	do	17	4	17	15	36	89
Wm. Knight, do R.R. 3	W.C.Y. Dent	17	4	18	15	34	88
Jas. McPherson, Clear Springs.	do	16½	4½	18	15	33½	87½
H. B. Muckle, Blenheim, R.R. 2	Bailey	15	4	18	15	33	85
S. Clark, do R.R. 3	W.C.Y. Dent	16½	4	17	14	33	84½
L. Huffman, do R.R. 3	do	15	3	17	15	32	82
HOWARD AGR. SOCIETY.							
Judge—S. M. Pearce, Fingal, R.R. 1.							
W. Leatherdale, Thamesville, R.R. 4	Longfellow	18	4	20	14	33	89
J. Mason, Ridgetown, R.R. 1	Golden Glow	18½	4	16	12	34	84½
C. West, Northwood, R.R. 3	Longfellow	18	4	16	14	31	83
W. Simpson, Ridgetown, R.R. 1	W.C.Y. Dent	17	4½	18	13	30	82
T. Gosnell, do R.R. 3	do	16½	4½	15	14	31	81
G. McDonald, do	do	16	4½	13	15	32	80½
H. Wright, Northwood, R.R. 3	do	17	4	15	13	31	80
N. C. Campbell, Ridgetown, R.R. 2	Longfellow	16	4½	15	15	29	79½
F. Brien, do	W.C.Y. Dent	15½	4	17	12	30	79
Thos. Tope, do R.R. 1	do	17½	4½	13	12	32	79
W. Cudmore, do R.R. 3	Golden Glow	16½	4½	16	13	28	78
F. McGregor, do R.R. 2	W.C.Y. Dent	15	4	14	15	30	78
J. R. Serson, do	do	18	4	10	11	34	77
D. R. McDiarmid, do	Leaming	17	4	15	12	30½	76½*a*
H. Cattan, Northwood, R.R. 3	Wisconsin No. 7	16½	4½	16	9	30	76
J. D. Brien, Ridgetown	W.C.Y. Dent	15½	4½	14	13	28½	75½
J. S. Clark, do	Longfellow	16	4	14	14	26	74
D. A. Gawne, do R.R. 2	8-Rowed Yellow Flint	15	4½	16	13	27	73½*a*
Gosnell Bros. do R.R. 3	W.C.Y. Dent	15½	4	15	13	25	72½
W. A. McDonald, do R.R. 3		15	4	10	14	29	70*a*
RALEIGH AND TILBURY AGR. SOCIETY.							
Judge—S. M. Pearce, Fingal, R.R. 1.							
Jas. Grey, Merlin	W.C.Y. Dent	18	4½	17	14	36	89½
Jas. Wellwood, do	Wisconsin No. 7	17	4	20	14	32	87
S. Sales, do	Minnesota Y. Dent	18	4	17	15	33½	85½*a*

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
KENT—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
RALEIGH AND TILBURY AGR. SOCIETY—*Continued.*							
M. J. Seale, Merlin, R.R 4	New Leaming	17	4	16	14	36	85*a*
B. Atkinson, do	Wisconsin No. 7	18	4½	16	11	34½	84
G. Wright, do	Bailey	16	4½	17	15	31	83½
J. Sheats, do R.R. 2	Minnesota Y. Dent	16½	4½	16	15	32	82*a*
Jos. Brady, do R.R. 5	Wisconsin No. 7	17½	4½	16	12	31½	81½
W. O. Pettiner, do R R. 2	Minnesota Y. Dent	16½	4½	16	15	31	81*a*
C. Marriott, do	Leaming	16½	4½	17	15	29	80*a*
J. Jenner, do	W.C.Y. Dent	16	4½	13	14	31½	79
N. Irwin do	Minnesota Y. Dent	17½	4½	15	12	31	78*a*
J. Renwick, do	Wisconsin No. 7	17	4½	15	11	30	77½
A Roe, do R.R. 5	W.C.Y. Dent	16½	4	15	12	25	72½
WALLACEBURG AGR. SOCIETY.							
Judge—Jas. Pullin, Woodstock, R.R. 1.							
Jos. Coveney, Electric	W.C.Y. Dent	18½	4	19	14	37	92½
Dan Coveney do	do	18	4	19	15	36	92
W. E. Gordon, do	Golden Glow	19½	4	18	15	35	91½
O. Crowe, Wallaceburg	do	17½	4	18	15	33	87½
Hy. Forbes, Tupperville	W.C. Y Dent	16	4	17	15	35	87
H. Handson, Electric	do	17	4	18	14	33	86
J. Langstaff, Tupperville	do	14½	4	16	14	37	85½
D. McCreary, Wallaceburg, R.R. 2	do	16½	4	15	15	33½	84
Jno. Coveney, Electric	Bailey	16	4	16	14	32	82
Geo. Hazzard, Wallaceburg	W.C.Y. Dent	14	3	15	14	32	78
T. Files, Electric	Golden Glow	16	3	15	14	29	77
C. Crowe, Wallaceburg	do	13½	3	10	14	34	74½
LAMBTON.							
BROOKE AND ALVINSTON AGR. SOCIETY.							
Judge—R. H. Abraham, Chatham, R.R. 1.							
J. Hand, Alvinston, R.R 4	Golden Glow	18	4	19½	14½	38½	94½
N. McCallum, do	Wisconsin No. 7	18	4	19	14½	38½	94
D. Hayter, do	Stowell's Evergreen	18½	4	19½	14½	38½	93*a*
T. Braithwaite, do	Golden Glow	18	4	18	14½	38	92½
D. Cann do	do	17½	4	17	14½	38½	91½
J. McCallum, do	do	17½	4	17	14½	38	91
T. H. Lovell, do	Wisconsin No. 7	17	4	19	14	36½	90½
L. W. Oake, do	Golden Glow	17	4	16½	14½	38	90
D. A. McIntyre, do	do	15	4	14	14	37	84
W. J. Weed, do	do	15	4	10	14	35	78

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RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
LAMBTON—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
FLORENCE AGR. SOCIETY							
Judge—R. J. Wilson, Charing Cross.							
R. Currie, Florence	Wisconsin No. 7	19	4½	19	14½	37	94
J. H. Powell, Inwood, R.R. 1	Golden Glow	19	4½	19¾	14½	35	92¾
W. Rush, do	Rochester	18½	4½	18	13½	36½	89*a*
J. Parking, Croton	Golden Glow	17¼	4½	18	14½	34	88¼
W. J. Sinclair, do	Wisconsin No. 7	18½	4½	16	15	34	88
H. Paul, Florence	W.C.Y. Dent	17¼	4¼	20	13	33	87½
B. Harris, Thamesville	Imp. Leaming	17¼	4¾	18	14½	34	86½*a*
W. J. Morningstar, Croton	W. C. Y. Dent	18	4½	18¾	11	33¾	86
W. J. Davis, Florence	Golden G ow	16	4½	17½	14½	32½	85
W. J. Bodkin, Thamesville	Wisconsin No. 7	16	4¼	16	15	33	84¼
C. O. Pierce, Bothwell	W. C. Y. Dent	16	4½	14	4½	33	82
LINCOLN.							
NIAGARA TOWN AND TP. AGR. SOCIETY.							
Judge—M. M. Hunter, Onondaga.							
Jno. Craise, Niagara-on-the-Lake, Box 107	Imp. Leaming	19	5	20	15	36	93*a*
R. G. Dawson, Niagara-on-the-Lake, R.R. 2	North Dakota	17	5	19	15	35	91
P. Lees, Niagara-on-the-Lake	Imp. Leaming	17½	4	19	15	37	90½*a*
W. Shepherd, do	Nugget	18½	4½	17	15	37	90*a*
A. Bufton, Niagara-on-the-Lake, R.R. 2	Longfellow	17½	5	13	15	37½	88
R. L. Shaw, Niagara-on-the-Lake, R.R. 2	Quebec Yellow	18	5	15½	15	34	87½
T. E. Hiscott, Niagara-on-the-Lake	Longfellow	18	4	17	14	33	86
N. Stevens, Virgil	North Dakota	17	5	18	15	30	85
C. H. Bufton, Niagara-on-the-Lake	Longfellow	16	5	12	15	32	80
MIDDLESEX.							
DORCHESTER AGR. SOCIETY.							
Judge—B. R. Cohoe, South Woodslee.							
C. Connor, Dorchester, R.R. 2	Golden Glow	17½	4½	18	14	34	88
L. Beacham, Mossley, R.R.2	do	17½	4½	17	14	33	86
C. Beacham, do R.R.2	do	17	4½	17	14	33	85½
G. Boxall, do R.R.2	do	17	4½	19	14	30½	85
R. E. Neely, Dorchester	do	16½	4½	16	13	31	81
Mrs. E. D. George, Mossley, R.R. 2	Leaming	17	4½	16	12	33	80½*a*
Chas. Hunt, Dorchester	G. G. and W. Cap	17	4	17	10	32	80
F. S. Atkin, Mossley, R.R. 2	Bailey	16	4½	15	12	31	78½
G. F. Neely, Dorchester	Smut Nose Flint	15½	4	16	12	29	74½*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	Yield of fodder and grain.	Totals of scores.
MIDDLESEX—*Continued.*		[20]	[5]	[20]	[15]	[40]	[100]
LONDON TP. AGR. SOCIETY.							
Judge—B. R. Cohoe, South Woodslee.							
P. L. Graham, Ilderton, R.R. 2	Bailey	18	4	18	14	35	89
W. T. Whillans, do R.R. 2	W. C. Y. Dent	18	4	18	14	34	88
C. W. Hobbs, Denfield	Wisconsin No. 7	18	4½	18	14	32	86½
John Arnutt, Hyde Park	W. C. Y. Dent	17	4½	19	13	32½	86
H. C. Robson, Denfield	Leaming	18½	4½	17	11½	36	85½*a*
L. C. McLary, London, R.R. 2	Wisconsin No. 7	17½	4½	17	14	32	85
J. D. McEwen, Denfield	W. C. Y. Dent	17	4½	18	13	32	84½
G. E. Sinker, Ilderton, R.R. 2	do	17	4	17	13	33	84
R. Cunningham, Denfield	Butler's Dent	16	4½	17	13	32½	81*a*
N. Grieve & Sons, Ilderton, R.R. 2	W. C. Y. Dent	16	4	16	13	31	80
J. A. Campbell, Ilderton, R.R.2	do	16½	4	17	11	31	79½
M. H. Ross, Denfield	Bailey	15	4	13	13	31	76
NORFOLK.							
COURTLAND AGR. SOCIETY.							
Judge—G. A. Williams, 201 Gordon St., Guelph.							
J. Munn, Courtland, R.R. 2	Wisconsin	19	4½	18½	15	36½	93½
V. McDonald, Tillsonburg, R.R. 4	W. C. Y. Dent	18	4½	19	15	35½	92
J. F. Robinson, Courtland,	Golden Glow	17½	4½	18	14½	36	90½
G. A. Ronson, do	Leaming	17	4½	18	14½	35½	87½*a*
I. Atkinson, do R.R. 2	Golden Glow	16	4	16	15	36	87
W. E. Sandham, Tillsonburg, R.R 4	W.C.Y. Dent	17½	4	17	15	33	86½
J. F. Simmons, Courtland	do	16½	4	16	15	34½	86
R. G. Herron, do	do	15	4	16	15	35	85
C. W. Graydon, Delhi, R.R. 3	do	14½	3½	18	15	33½	84½
H. Fisher, Tillsonburg, R.R. 1	do	15½	4½	17	15	32	84
NORFOLK AGR. SOCIETY.							
Judge—Thos. Creighton, Moo etown							
J. E. Wilson, Delhi	Leaming	18	4	19	14	36	89*a*
T. Leedman, St. Williams, R.R. 2	Golden Glow	17½	4½	18	14	34½	88½
W. C. Everett, Simcoe	do	15½	4	19	14	35½	88
L. Forest, Nixon	do	17	4	18	14	34	87
C. Yeager, Lynnville		16	4	17	14	35½	84½*a*
J. E. Johnston, Simcoe		15½	4	18	13	34	82⅔*a*
P Yeager, Waterford		15	4	16½	14	34¾	82¼*a*
J. Austin, Simcoe, R.R. 3	W. C. Y. Dent	16½	3	14	14	34½	82
B. Hall, do R.R. 2	Mixed	15½	4	16	12	32	77½*a*
A. H. Smith, do R.R. 2	Golden Glow	13½	4½	13	14	29	74

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
NORFOLK—*Continued.*		[20]	[5[	[20]	[15]	[40]	[100]
N. WALSINGHAM AGR. SOCIETY. *Judge—Thos. Creighton, Mooretown.*							
G. McDowell, Port Rowan	W. C. Y. Dent	18½	4½	18	14½	36	91½
F. L. Doan, Wyecombe	do	18	4½	19	14	33	88½
C. Cowan, Langton	do	18	4	18	14	34	88
W S. Collings, do	do	16	4	18	14½	35	87½
W. H. Hunter, do	do	17½	4	18½	14	33	87
B. Wilson, Lynedoch	Longfellow	15½	4	18¼	14	35	86¾
W. Wittet, Courtland	W. C. Y. Dent	18	4	16¼	14	34	86¼
G. B. Robinson, Langton	do	14½	4	17	12	38½	86
R. Hunter, Lynedoch	do	17	4	19	13	33	86
R. Massecar, Wyecombe	do	15½	4	18	14	34	85½
C. Brandon, Langton	do	16	4	18	13	34	85
C. Heatherington, Courtland	Leaming	16½	4	18	12	36	84½*a*
G. McKim, Lynedoch	W. C. Y. Dent	17	4	15	14	34½	84½
W. F. Swain, Langton	do	15½	4	17¼	14	33½	84¼
Jas. Brayley, do	do	14½	4	17	14	33½	83
C. Hunter, Wyecombe	Smut Nose	15	4	18	13	34	82*a*
E. E. Murphy, Silver Hill	Crompton's Early	16	4	17½	14	32	81½*a*
J. Holmes, Langton	W. C. Y. Dent	15	4½	19½	14	28	81
Alf. Rodgers, Lynedoch	do	15½	4	17	13	31	80½*a*
H. Rice, Glen Mills	Leaming	14½	4	16	14	33	79½
NORTHUMBERLAND. SEYMOUR AGR. SOCIETY. *Judge—W. Hickson, Bobcaygeon.*							
Alex. Hume, Campbellford, R.R. 3	Leaming	18½	4	17	15	36½	89*a*
T. Weatherill, Campbellford	do	18	4½	18	15	35	88½*a*
H S. Aylesworth, Norham	Wisconsin No 7	18	4	16	15	33	86
Wm. Rannie, Campbellford	Leaming	18½	4½	16	15	33½	85½*a*
L. Evans, Norham	Mixed	18	4	15	15	35	85*a*
R. Innis, Campbellford	Leaming	18½	4½	14	15	34½	84½*a*
P. Oddie, do	do	18	4¼	14	15	35	84¼*a*
E. A. McCook, do	Early Leaming	18	4	17	15	30	82*a*
A. H. McKelvie, do		17	4½	17	15	29½	81*a*
M. West, do	Leaming	17	4½	18	15	28	80½*a*
T. Locke, do	Early Leaming	16½	4½	19	15	26	79*a*
C. E. Bonneycastle, do	W. C. Y. Dent	17½	4	15	15	26	77½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
ONTARIO.		[20]	[5]	[10]	[15]	[40]	[100]
BEAVERTON AGR. SOCIETY.							
Judge—A. Forster, Markham.							
John Westlake, Beaverton, R.R. 3	Wisconsin No. 7	18½	4½	19	15	37	94
W. R McKay, Beaverton, R.R. 2	Golden Glow	17½	4	19	14½	36¾	91¾
D. Brown, Beaverton, R.R. 1	W. No. 7, Gol. Glow	17¼	4¼	17¾	14	35¾	89
Joe McDonald, do	Lgfel., Wis. No. 7	17	4½	18	14¼	35	88¾
Wm. H. Ross, do	Wisconsin No. 7	16½	4½	18	14½	35	88½
F. W. Rilance, do R.R. 2	Golden Glow	16½	4½	16	14½	36½	88
Jno. Ross, do	Wisconsin No. 7	17	4¾	16¾	14½	34¾	87½
A. Ross, do R.R 1	do	16	4	18	14½	34½	87
Jno. Alsop, do R.R. 2	do	17	4½	15¾	14	35½	86¾
Jno. Harrison, do	Golden Glow	16	4½	18½	14½	33	86½
Robt. Ross, do R.R. 1	Wisconsin No. 7	16	3	17½	14½	33½	84½
D. Gilchrist, Brechin, R.R. 1	W. C. Y. Dent	15½	3¼	17½	14½	33½	84¼
T. Waddell, do R.R. 1	Wisconsin No. 7	15½	3	17½	14½	33½	84
J. J. King, Cannington	Ab., G.G., Wis.No. 7	15½	4	17½	14	32½	82½*a*
Dunrobin Farms, Beaverton	W.C.Y.D., L'gfellow	16	4½	15½	13½	34	83¼
OXFORD.							
E. NISSOURI AGR. SOCIETY.							
Judge—Jas. McLean, Richmond Hill, R.R. 1							
G. R. Mathieson, Harrington West	Golden Glow	19	4	20	14	37½	94½
W. I. Hogg, Thamesford, R.R.2	do	18½	4	19	15	37½	94
S. G. Skinner, do R.R.1	do	18½	4½	19½	14	37	93½
Sam Tye, do R.R.1	W. C. Y. Dent	18½	4½	18	14	37	92
A. Webster, Lakeside, R.R. 1	Golden Glow	19	4	17	15	35½	90½
J. Henderson, do R.R. 2	do	17½	4	16½	15	36	89
B. Thornton, Thamesford	do	18	4	16	15	35½	88½
D. R. Calder, Lakeside, R.R. 2	do	17½	4½	16	15	35	88
D. Thompson, Thamesford	do	16½	4½	16	15	34½	86½
F. G. Seaton, Lakeside,	Wisconsin No. 7	16½	3½	15½	15	35½	86
A. Whetstone, do R.R. 2	Golden Glow	16¼	4	18	14	32¾	85
S. NORWICH AGR. SOCIETY.							
Judge—R. H. Abraham, Chatham, R.R. 1.							
Wm. Innis, Otterville, R.R. 2	Wisconsin No. 7	18	4	18½	14	38½	93
J. Ryder, do	do	18	4	19½	14	37	92½
A. Lawrence do	do	18½	4	16	14¾	39	92¼
A. Moore, Norwich, R.R. 1	W. C. Y. Dent	18	4	16¾	14½	38½	91¾
T. Stroud, Springford	Wisconsin No. 7	17	4	18	14	38½	91½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
OXFORD—*Continued.*		[20]	[5]	[10]	[15]	[40]	[100]
S. Norwich Agr. Soc.—*Con.*							
L. Mason, Otterville, R.R. 1	Wisconsin No. 7	18¼	4	16	14½	38½	91¼
G. Hensall, do	do	17½	4	18	14	37½	91
H. Treffray, do R.R. 1	do	18½	4	15	14½	38½	90½
C. Longstreet, do	do	17	4	17½	14	36½	89
Wm. Bell, Springford	do	17	4	16	14¼	37½	88¾
C. Barnham, do	do	16½	4	17	14	36½	88
G. A. Parker, Otterville	do	16½	4	18	14	35	87½
W. Varden, Springford	do	16	4	17	13	36½	86½
Eli Barnham, do	do	16	4	17	13½	35½	86
I. Fox do	do	16	4	16	13	36	85
W. Treffray, Otterville	do	18	4	12	14	37	85
G Mudge, do	do	17½	4	10	14	37	82½
G. Parsons, do	do	15	4	17	14	32	82
T. Brumpton, do	do	16	4	10	14	37	81
J. McElhone, do	do	16½	4	10	14	35½	80
J. Johnston do	do	16	4	10	13	35½	78½
J. Seignor, do R.R. 2	do	14	4	8	14	31	71
Woodstock Agr. Society.‡							
Judge—Jas. McLean, Richmond Hill, R.R. 1.							
J. W. Innes, Woodstock,	Golden Glow	19½	5	19	15	38	96½
E. Tree, do R.R. 3	do	19	4½	18	15	37½	94
J. C. Karn, do R.R. 1	Wisconsin No. 7	19	4½	18½	15	36½	93½
Chas. Williams, Ingersoll, R.R. 5	W. C. Y. Dent	17½	4½	18	15	37	92
F. W. Goble, Woodstock, R.R. 3		18	4½	18	15	36	91½
H. Cody, do R.R. 4	Eureka	17¾	4¾	19	15	36	90½*a*
J. F. McDonald, do R.R. 3	Golden Glow	18	4½	17½	14	35½	89½
T. H. Dent, do	Wisconsin No. 7	17¾	5	18	15	33¼	89
H. Turner, do R.R. 3	do	17½	5	19	15	32	88½
J. S. Amos, do R.R. 5	Leaming	18	5	17	15	35	88*a*
B. R. Towns, Beachville	do	16½	5	19	15	34	87½*a*
J. Pullin, Woodstock, R.R. 1	Golden Glow	16¼	5	16	15	35	87¼
G. Foreman, do	Imp. Leaming	18	4	18	15	34	87*a*
McGhee Bros., Beachville	Golden Glow	16½	5	17	15	32½	86
F. Parker, Woodstock, R.R. 7	Wisconsin No. 7	15½	4½	16	15	34½	85½
Burns Smith, do R.R. 7	Golden Glow	17	5	15½	14	33	84½
Ed. Adams, do R.R. 5	Leaming	16½	4½	16	15	34	84*a*
G. Bragg, do	Wisconsin No. 7	15½	4½	16	15	32½	83½
PEEL.							
Toronto Tp.‡ Agr. Society.							
Judge—F. G. Brown, Ancaster.							
J. B. Ross, Meadowvale	Wisconsin No. 7	16½	4	15½	13	35	84
S. W. Switzer, Streetsville		15	4½	19	12	33	81½*a*
J. K. Featherston, do	Big Crop	15½	3½	15	13	35½	80½*a*
N. H. McCaugherty, do	do	15½	4	16	13	31	77½*a*
S. Hall, do	Mixed	14	4	16	12	33	77*a*
E. Adamson, do	Big Crop	14	4	15	14	31½	76½*a*
J. Miller, do	do	13½	4	17	13	27	72½*a*

Note.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
PERTH.		[20]	[25]	[10]	[20]	[25]	[100]
FULLARTON, LOGAN AND HIBBERT AGR. SOCIETY.							
Judge—B. R. Cohoe, South Woodslee							
G. Krauskoff, Dublin	Bailey	18	4½	19½	14	35	91
Wm. Forester, Mitchell	Golden Glow	18½	4½	18	14	35	90
Mrs. G. Hillebrecht, Bornholm	Bailey	17½	4½	18	14	35	89
J. Worden, Staffa	do	17½	4½	18½	14	34	88½
G. Kemp, Mitchell, R.R. 1	do	17½	4½	19	13	34	88
H. R. Greenwood & Son, Mitchell, R.R. 1	Wisconsin No. 7	17½	4½	18	13	34½	87½
A. Krauskoff, Dublin	Bailey	17½	4½	18	14	33	87
A. Cole, Russeldale	do	17	4½	18	13	33½	86
R. Scott, Cromarty	Gold Champion	17	4½	18	13	35	85½*a*
J. Scott, do	do	17	4½	17½	13	35	85*a*
E. Docking, Dublin, R.R. 2	Bailey	16	4½	18	13	32½	84
J Winteringham, Staffa	do	16	4½	16	13	31	80½
STRATFORD AGR SOCIETY.							
Judge—A. J. Thomson, 74 Annette St., Toronto.							
W. W. Ballantyne, Strat ord, R.R. 3	G.G. and Wis. No. 7	17½	4	19	11	37	88½
F. Bell, St. Paul's, R.R. 2	Golden Glow	16	3½	19	14	35	87½
R. Thompson, St. Paul's, R.R.2	W. C. Y. Dent	17	3½	19	14	33	86½
Arbogast Bros., Sebringville	Golden Glow	15	3	18	14	31	81
D. M. Ballantyne, Stratford, R.R. 3	do	14	4½	18	13	29	78½
W. Rae, St. Paul's, R.R. 1	W. C. Y. Dent	14	4	17	9	31½	75½
J. Litt, Sebringville	do	13½	3½	18	8	27	70
PETERBOROUGH.							
EAST PETERBOROUGH AGR. SOCIETY.							
Judge—W. Hickson, Bobcaygeon.							
P. McConnell, Norwood	Wisconsin No. 7	18½	4	20	15	34	91½
Thompson Bros., Indian River, R.R. 3	W. C. Y. Dent	18½	4	18	15	35	90½
S. McMillan, Norwood	Leaming	18½	4½	18	15	36	90*a*
Wm. Knox, Indian River, R.R.2	do	18½	5	17	15	36	89½*a*
H. Cuthbertson, Norwood	do	18½	4½	19	15	33½	88½*a*
A. Brethen, do	Wisconsin No. 7	17½	4	17	15	33½	87
G. Edwards, do R.R. 1	Leaming	17½	5	17	15	34	86½*a*
T. Dunham, Campbellford, R.R. 4	W. C. Y. Dent	17½	3½	18	15	32	86
Wm. Comestock, Norwood, R.R. 3	Leaming	17	5	17	15	32	84*a*
R. Patterson, Warsaw, R.R. 1	W. C. Y. Dent	17	5	16	15	29½	82½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
PRINCE EDWARD.		[20]	[25]	[10]	[20]	[25]	[100]
AMELIASBURG AGR. SOCIETY.							
Judge—J. D. McLennan, Lancaster, R.R. 1.							
J. S. Barber, Rossmore	Golden Glow	16	5	19	14	37	91
J. R. Anderson, Mountain View	Wisconsin No. 7	15	5	18	14	35	87
L. Wallbridge, Rossmore, R.R.1	W. C. Y. Dent	16	3	18	12	36	85
J. Simpson, do	Wisconsin No. 7	19½	4	12	14	35	84½
J. A. Weese, do	W. C. Y Dent	14	4	15	12	38	83
C. R. Parliament, Ameliasburg	Red Nose White	17	4	19	14	30	82*a*
J. S. Wallbridge, Rossmore	W. C. Y. Dent	12	4	19	14	32	81
T. Nightingale, do	do	16	4	19	14	25	78
PRINCE EDWARD AGR. SOCIETY.							
Judge—J. D. McLennan, Lancaster, R.R. 1.							
Fred Hubbs, Bloomfield, R.R. 1	Wisconsin No. 7	19	5	19½	15	34	92½
M. Huff, do	do	17	2	20	15	35	89
W. H. Gough, do	do	19	3½	16	14	36	88½
P. Cave, do	do	17	4	19	14	34	88
H. McDonald, do	do	14	3	19	15	35	86
Ed. B. Purtelle, do	do	16	4	19	14	31	84
B. R. Leavens, do	do	13	4	19	14	32	82
H. Leavens, do	do	17	4	20	14	23	78
E. M. Herrington, Picton	do	18	4	10	14	29	75
G. Thompson, Bloomfield	do	13	5	18	15	22	73
A. B. Wilson, do	do	15	3	18	14	20	70
RUSSELL.							
RUSSELL AGR SOCIETY.							
Judge—S. G. Gourlay, 91 Second Ave., Ottawa.							
J. E. Adams, Russell	W. C. Y. Dent	18	4	18	15	38	93
H. F. Carscadden, do	do	17½	4	18	15	37	91½
H. Boothe, do	do	17½	4	18	14	35	88½
J. Paul, do	Bailey	16½	4	17	14	34½	86
J. Fitzpatrick, do	W. C. Y. Dent	16	4	16	14	34	84
C. Cherry, do	W.C.Y.D., Bailey	16	4	19	14	30	83
M. Stanley, do	W. C. Y. Dent	16	4	18	14	30½	82½
J. Wilson, do	Leaming	15	4	17	15	32	81*a*
E. Summers, do	Bailey	15	4	17	14	30	80
E. Young, do	W. C. Y. Dent	15	4	16	14	30½	79½
E. Hamilton do	do	15	4	17	14	29	79
H. Graham, do	do	15	4	17½	14	28	78½
D. Cummings, do	do	15	4	14	14	29	76
W. P. Cherry, do	do	15½	4	13	13	29½	75
D Cummings, do	do	14½	4	13	12	29½	73
W. Boothe, do	do	14	4	14	12	28	72

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	†Yield of fodder and grain.	Totals of scores.
VICTORIA.		[20]	[25]	[10]	[20]	[25]	[100]
VERULAM AGR. SOCIETY. *Judge—A. Forster Markham.*							
A. Mitchell, Bobcaygeon	W. C. Y. Dent	18¼	4½	19½	14½	38	94¾
T. Cosh, do	W.C.Y. Dent, G.G.	18	4½	18½	14	36½	91½
J. Taylor, Dunsford	Imp. Leaming	18¼	4½	18½	14¾	36	90*a*
J. Robertson, do	Golden Glow	16¾	4¼	18	14½	36	89½
R. Watts, Bobcaygeon	Wisconsin No. 7	16¾	3½	18	14½	35	87¾
C. Logan, do	do	16½	4	17	14½	35	86¾
R. T. Robertson, Dunsford	W.C.Y. Dent, G.G.	16½	4½	16	14	35	86
L. Steele, do	W. C. Y. Dent and Wisconsin No. 7	16½	4	15½	14	35¼	85¼
E. J. Long, Bobcaygeon	W. C. Y. Dent	16¼	4	17	14½	32½	84¼
E. Thurston, do	W.C.Y. Dent, G.G.	16	4	16½	14	33	83½
H. R. Seymour, do	Wis. No. 7, Leaming	16½	4½	16	13	33½	82½*a*
H. McGee, do	Wisconsin No. 7	14½	4¾	15½	14	31	79¾
G. W. Bick, do	G.G., Wisconsin No. 7 and Leaming	15½	4¾	14	13	31½	77¾*a*
WELLAND. BERTIE AGR. SOCIETY. *Judge—M. M. Hunter, Onondaga.*							
H. Miller, Bridgeburg, Box 135	Excelsior	18½	4	17	15	37	89½*a*
J. C. Baker, Stevensville	Wisconsin No. 7	17½	3½	18	14	36	89
E. O. Disher, Ridgeway, R.R. 2	W. C. Y. Dent	17	4½	18	13	36	88½
M. W. Sexsmith, do	North Dakota	16	4	19	15	34¼	88¼
G. Sexsmith, do R.R. 2	Wisconsin No 7.	17	4	17	15	35	88
J. E Jewson, Fort Erie, R.R. 1	Coatsworth	16½	4	19	14	34	85½*a*
G. W. Miller, Stevensville, R.R. 2	Wisconsin No. 7	16½	3	17	15	33	84½
J. R. Phillips, Fort Erie, R.R. 1	do	15½	3½	17	13	32	81
F. Sexsmith. Ridgeway	W. C. Y. Dent	14	4	17	13½	31	79½
F Hanes & Son Fort Erie R.R. 1	do	14	4	17	14	30	79
J. E. Laur & Son, Bridgeburg	Golden Glow	14	4	14	14	32½	78½
J. S. Miller, Stevensville R.R.2	Imp. Leaming	14	4	15	15	32	78*a*
Jno. McGaw, Fort Erie, R.R. 1	W. C. Y. Dent	16	4	10	14	33	77
Wm. Woehl, Bridgeburg	Golden Glow	12½	4	15	14	31	76½
W. Clough, Fort Erie	W. C. Y. Dent	13	4	15	14	30	76
F. W. Near, Sherkston, R.R. 1	Longfellow	14	4	14	15	27	74

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from smut and insects.	Thoroughness of cultivation.	Purity of variety.	Yield of fodder and grain.	Totals of scores.
WELLINGTON.		[30]	[5]	[20]	[15]	[40]	[100]
CENTRE WELLINGTON AGR. SOCIETY							
Judge—T. G. Brown, Ancaster.							
R. Caldwell, Fergus	Wisconsin No. 7	18	4½	19	14	37	92½
J. Lowe, Elora	Golden Glow	18½	4	17	15	36	90½
Ross Bros., Fergus	do	18	4½	17	13	37½	90
J. H. Anderson, Fergus, R.R. 4	Wisconsin No. 7	17½	4	19	13	36	89½
W. Hutcheson, Rockwood, R.R. 1	do	16½	4½	19	14	35	89
Colbeck Bros., Elora	do	16½	4	18	14	33½	86
S. Meyer, Elora	do	15½	4½	16	12	33½	81½
J. R. Caldwell, Fergus	do	15½	4	16	13	32½	81
J. L. Benham, Rockwood	do	15½	4	15	13½	32½	80½
J. P. Bosomborth, Elora	Golden Glow	16	4	17	11	31	79
R. Cummings, do	do	14½	4	19	12	27½	77
A. R. Wood, Fergus, R.R. 4	Wisconsin No 7	15	4	16	13	28	76

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
ALGOMA.		[15]	[17]	[20]	[10]	[38]	[100]
BRUCE MINES AGR SOCIETY.							
Judge—F W. Present, Saulte Ste. Marie.							
Cliff Mills, Bruce Mines	Carmen No. 1	13½	16½	17½	9	29	85½
W. T. Vaughan, do	do	12½	16½	15	10	29	83
Harold Skusky, do R.R. 2	Comet	12½	16	19	9	27	81½*a*
S. J. Vaughan, do	Beauty of Hebron	12	16½	19½	9	23	78*a*
N. S. Pace, do	Carmen No. 1	8½	16½	18	8½	25	76½
J H. Jeffrey, do	Carmen No. 3	11½	13	18½	4½	29½	75*a*
J. Rogers, do	Empire State	12½	16	15	7	22½	71*a*
NORTH SHORE AGR. SOCIETY.							
Judge—F. W. Present, Sault Ste. Marie.							
W. R Majaury, Laird	Green Mountain	13½	15½	18	8½	29½	85
J. W. Booth, Bar River	do	13	16	19	9	24	81
C. Moore, McLennan	Gold Coin	12	16	16	10	26½	80½
A. L. Tuckett, Echo Bay	do	13	15½	17½	9½	23½	79
Tuffield Larocque, Laird	Green Mountain	13	15½	18	10	22	78½
J. Keating, do	do	11½	15½	19	6	25½	77½
Ed. Pollard, Echo Bay	Carmen No. 1	12½	16	16	10	22	76½
F. A. Newman, Bar River	Empire State	11½	16	18½	9	20	73*a*
Geo. Brodie, do	Gold Coin	10½	13½	18½	10	20	72½
Wm. Barkley, do	Carmen No 3	12½	13½	17½	5½	24	71*a*
ST. JOSEPH ISLAND AGR. SOC.							
Judge—F. W. Present, Sault Ste. Marie.							
W. H. Caulfield, Richards Ld'g.	Empire State	14	15	19	10	25½	81½*a*
A. W. Stableforth, do	Green Mountain	11	15	17	9	28	80
Bert Hamson do	Davies Warrior	11	16	17½	8	24	76½
Thos. White do	do	13	15½	18	10	19½	76
Geo. Smedley, do	Green Mountain	10½	15½	18½	6	21½	72

*General appearance—Considering method of planting, stand of crop, and vigor of growth.

†Apparent Yield—Considering weight of marketable potatoes, per square yard, quality, smoothness and uniformity of shape, state and uniformity of maturity, and freedom from sunburn.

*a*Points deducted for non-standard variety.

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield.	Totals of scores.
ALGOMA—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
THESSALON AGR. SOCIETY.							
Judge—F. W. Presant, Sault Ste. Marie.							
W. Weir, Thessalon, R.R. 2	Green Mountain....	13½	15½	17½	10	27	83½
D. M. McLennan do R.R. 2	Beauty of Hebron..	12½	15½	19	9	26½	80½*a*
Jos. Broughton, do R.R. 2	do ..	12½	15½	19	10	25	80*a*
J. W. Hagen, do	do ..	11	16	19	10	23½	76½*a*
J. McDougall, Sowerby.....	Prizetaker.....	12½	13½	15	8½	26	75½*a*
Wm. Gillespie, Thessalon, R.R2	Beauty of Hebron..	10	15½	17½	10	23	74*a*
A. Bell, Sowerby.....	Green Mountain....	10	15½	18½	10	19½	73½
Proud Bros., Bruce Mines.....	Comet.....	10½	16	18	5	25½	73*a*
J. Leach, Thessalon, ...	Beauty of Hebron..	8	15½	19	8	23½	72*a*
J. R. McLennan, do R.R. 2..	do ..	8½	15	16½	10	23½	71½*a*
T. Cordukes, do R.R. 2..	do ..	10	15½	18½	8	20½	70½*a*
BRUCE.							
HEPWORTH AGR. SOCIETY.							
Judges—J. M. Dalgleish, Ottawa, and Jas. Boyd, Markham							
Chas. Walker, Hepworth....	Empire State.....	14	16½	19½	10	32½	90½*a*
Henry Wilson, do	do	13½	15½	19	9½	30½	86*a*
C. A. Millard, do	do	12½	16	19	9½	30½	85½*a*
Alf. Forbes, do	do	13	16	19	7	32	85*a*
Jno. Eldridge, do	do	12½	16	19	9½	29½	84½*a*
Robt. Gates, do	do	12½	14	19	9½	29½	82½*a*
Percy Doubt, do	do	12½	16	18½	8½	28¾	82¼*a*
Hugh Anderson, do	Rural New Yorker..	11½	16	19	7½	30	82*a*
Thos. Hill, do	Empire State.....	12	16	19	8	28½	81½*a*
Geo. Hill, Parkhead.....	do	10	16	18½	8½	29½	80½*a*
Chas. Gates, Hepworth.....	do	12	14½	17½	7½	31	80½
Jas. Doubt, do	do	11	15	18½	7	29	78½*a*
A. F. Cunningham, do	do	10½	14	18	8	28½	77*a*
WIARTON AGR. SOCIETY.							
Judges—J. N. Dalgleish, and Jas. Boyd.							
F. H. Loney, Oxenden.....	Empire State.....	13½	16	18½	9	34½	89½*a*
Wm. Lembke, Wiarton, R.R. 2	Green Mountain ...	13½	15½	17½	9	31½	87
A. W. Hahn, do R.R. 2	do	13	15½	19	5½	29½	82½
A. R. Lembke, do R.R. 2	Empire State.....	10½	14½	19	9	30	81*a*
E. J. Loney, Oxenden.....	Lincoln.....	12	14	18½	8	28½	79*a*
Wm. Stephens, Wiarton R.R. 2	Empire State.....	11½	16	18½	6	28½	78½*a*
A. McCoag do R.R. 1	Amer. Wonder.....	7	15	18½	10	29¼	77¾*a*
R. Stephens, Jr. do R.R. 2	Empire State.....	11	14½	18	7	29	77½*a*
W. A. Ottowell, do R.R. 3	Green Mountain....	9	15	16½	8	27½	76
Fred N. Stephens, Wiarton, R.R. 2.....	Empire State.....	10	16	18½	8½	24	75*a*
C. W. Loney, do	do	11½	15½	18	6½	25½	75*a*
I. N. Rathwell, do R.R. 3	do	11	14	18½	7	26½	75*a*
Bert Beacock, do R R 2	do	9	15	16	10	26	74*a*
R. E. Steacy, do R.R. 3	Amer. Wonder.....	10	15½	12	10	25½	71*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
CARLETON.		[15]	[17]	[10]	[10]	[38]	[100]
METCALFE AGR. SOCIETY.							
Judges—H. Scott, Ottawa, and D. English, Burketon.							
Wm. Waddell, Edwards	Green Mountain	14½	15	18	10	24	81½
J. P. Carson, do	do	12½	10	15	9	24	70½
DUFFERIN.							
DUFFERIN AGR. SOCIETY.							
Judge—A. R. Sykes, Ottawa.							
W. H. Gillespie, Orangeville, R.R. 3	Green Mountain	13½	13	15	10	35	86½
Wm. L. Ewing, do R.R. 4	do	13	13	18	10	32	86
Walter Smith, Amaranth Sta.	Irish Cobbler	13½	11	17	9½	34	85
G. L. Dodds, Glencross	Green Mountain	13½	13	16	10	32	84½
Jas. Johnston, Orangeville, RR.6	do	13	12	15	9	33	82
W. P. Dodds, do R.R. 6	do	12	13	14	10	31	80
Ed. Corbett, do R.R. 6	do	12½	13	15	10	29	79½
Jno. A. Cornelius, Amaranth S.	do	13	11	16	10	28	78
Jos. Carney, do	do	13	12	16	9	27	77
Jos. H. Jackson, Orangeville, R.R. 1	do	12	11	14	10	27	74
Nelson Black, do R.R. 2	do	11½	11	10	9	31½	73
Geo. Lightle, Amaranth Sta.	do	9	13	14	8	28	72
DUFFERIN CENTRAL AGR. SOCIETY.							
Judge—A. R. Sykes, Ottawa.							
Archie Greer, Mansfield, R.R.1	Peabur	15	17	20	8	32	90*a*
R. E. Mortimer, Honeywood	Green Mountain	14	15	16	10	34	89
Wm. G. Noble, Shelburne	do	13½	14	16	10	34	87½
Geo. Best, do	do	13	13	16	10	34	86
Geo. E. Foster, Honeywood	Hustler	13	14	17	8	35	85*a*
E. Hill, Shelburne, R. R. 4	Empire State	14	14	15	10	30	81*a*
Rice Hill, Shelburne	do	13	14	15	9	31	80*a*
Robt. J. Hall, do	Green Mountain	12	12	15	10	29	78
W. J. Hamilton do R.R. 5	12 do	12½	13	16½	8	22½	72½
A. Ferris, do	do	10	11	15	8½	26	70½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield.	Totals of scores.
DUFFERIN—*Continued.*		[15]	[17	[10]	[10]	[38	[100]
EAST LUTHER AGR. SOCIETY. *Judge—A. T. Davidson.*							
H. Berry & Son, Grand Valley	Green Mountain....	13	14	19	8	29	83
Eli Newson, do R.R. 2	Delaware.....	13	14	17	8	28	80
Isaac Taylor, do R.R. 4	Gold Coin.....	13	14	18	8	26	79
R. H. Wansbrough, Laurel....	Irish Cobbler.....	14	14	16	8	26¾	78¾
E. G. Richardson, Grand Valley, R.R. 3.....	Green Mountain....	12½	14	17	8	27	78½
W. E. Turner, Grand Valley, R.R. 3.....	do	13	14	18	8	25	78
Ed. Crane, do	do	12	12	17	8	25	74
J. H. Hunter, do	do	12½	14	16	7	24	73½
W. Wilmott, do	do	13	13	16	8	23	73
Roy Smith, Waldemar.....	Irish Cobbler.....	12	13	15	8	22½	70½
DURHAM.							
CARTWRIGHT AGR. SOCIETY. *Judge—F. F. Reeves, Humber Bay.*							
Harold Beacock, Nestleton....	Irish Cobbler.....	12	13	16	8	30	79
L. E. Mountjoy, Burketon Sta..	Rural New Yorker..	12¼	12	16	7	30	75¼*a*
Rich Suggitt, Nestleton Sta. .	Dooley.....	13	16	14	5	27	75
Oscar Edwards, Nestleton.....	Green Mountain....	11	14	14	7	27	73
Herb. Hooey, Burketon.....	Irish Cobbler.....	11	10	16	9	26	72
W. C. Ferguson, Blackstock...	Green Mountain....	12	14	14	5	26	71
GREY.							
ROCKLYN AGR. SOCIETY. *Judges—J. M. Dalgleish, Ottawa: and Jas. Boyd, Markham.*							
Jno. Johnston, Markdale, R.R.2	Peerless.....	14	16½	19	10	33⅓	91*a*
Lorne Curry, Meaford, R.R. 2	Green Mountain....	13½	16½	19	9½	31	89½
W. J. Lush, Rocklyn, R.R. 7...	Amer. Wonder.....	13	16	19	9½	32	87½*a*
Thos. Langtree, Meaford, R.R4	do	13	16	18	9½	30¾	85¼*a*
C. Erskine, Markdale, R.R. 2..	Elephant.....	13	15½	18	8½	32	85*a*
J. Yeadell, Rocklyn, R.R. 2...	Amer. Wonder.....	11½	15½	18½	9	30½	83*a*
R. S. Clugston, do	Burpee Early.....	13½	16	15	9½	30	82*a*
J. A. Perry, Meaford, R.R. 4..	Amer. Wonder.....	11½	15	17½	8½	31	81½*a*
Geo. Yeadell, Rocklyn.....	Elephant.....	13	15	17½	9	28½	81*a*
W. Patton, do	Amer. Wonder.....	12½	15	17	6½	32	81*a*
Elgin Boyd, do	Early Elephant.....	12	14½	17	8½	29½	79½*a*
R. Storey, Meaford, R.R. 4...	Amer. Wonder.....	10	16	18½	9½	27½	79½*a*
W. R. Perry, Rocklyn.....	do	10	16	17	5	33	79*a*
R. J. Dunlop, Meaford, R.R. 4	Churchill.....	11	15½	19	7	27½	78*a*
J. A. Cook, Rocklyn.....	Burpee's Early.....	11	14½	16	9	28	76½*a*
Robt. Reid, Meaford, R.R. 2..	Amer. Wonder.....	12½	15	12	9½	27½	74½*a*
M. Abercrombie do R R. 4	do	11	15½	16	5	26½	72*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
HALTON.		[15]	[17]	[20]	[10]	[38]	[100]
NELSON AND BURLINGTON AGR. SOCIETY.							
Judge—J. M. Dalgleish, Ottawa.							
Thos. Fothergill, Bronte	Dooley	13	16	20	10	24¾	83¾
W. L. Smith, Freeman	Carman No 3	13½	16½	18	6	29¼	81¼a
Jabez Clarke, Burlington	do	13	16	19	9	20	75a
HASTINGS.							
MADOC AGR. SOCIETY.							
Judges—H. Scott, Ottawa, and D. English, Burketon.							
Mrs. Herb Blakeley, Eldorado, R.R. 1	Comet	13	15	18	7	28⅓	79⅓a
Jos. Chambers, Madoc	do	13	13	17	9½	26	76½a
Sam. McCorrie Eldorado	Green Mountain	12	11	16	8	28	76
Hy. Kells, Madoc	Comet	11	12	15	8	31	75a
Fred. Comerford, Eldorado	Uncle Sam	11	14	15	8½	28	74½a
W. T. Harris, Madoc	Irish Cobbler	10	12	15	8	26½	71½
Hardules Rollins, Cooper	Comet	12½	12	18	4	26	70½a
WOLLASTON AGR. SOCIETY.							
Judges—A. R. Sykes, Ottawa, and D. English, Burketon.							
E. Moore, The Ridge	Gold Coin	14	15	16	9	27½	81½
H. Moore, do	Green Mountain	12½	13	14	10	28	77½
Albert Danford, Coe Hill	Irish Cobbler	12½	14	16	7	26½	76
Robt. Thomson do	Green Mountain	11	13	15	10	26	75
Alex. Miller do	do	8	9	16	9	32½	74½
H. Johnson, do	do	7½	12	13	10	28½	71
Ed. Gunter, do	Irish Cobbler	11	10	14	8	27½	70½
Chas. Muffet, Sr., do	Gold Coin	7	13	15	10	25	70
KENORA.							
KENORA AGR. SOCIETY.							
Judge—A. B. Jackson, Elmira.							
S. Sundine, Box 314, Keewatin	Green Mountain	13½	15½	17	9½	34	89½
A. Ledyiere, Kenora	do	14	14	16	9	35	88
Hy. Webster, do	do	13½	15	17½	7	32	85
Gould Bros., do	Irish Cobbler	13½	14	17½	6	33½	84½
W. E. Knight, Pellatt	Green Mountain	13	14	16½	7½	31	82
Wm McKreith, Kenora	Irish Cobbler	13½	15	17	7	29	81½
Geo. H. Alcock, do	Green Mountain	13	14	15½	9½	29	81
Wm. Long, do	Irish Cobbler	13½	14½	16	6	30½	80½
A. R. Ascough, do	Green Mountain	13	13	17	7	30	80
J. F. Hinton, do	do	9½	12½	15	9½	30½	77
Jas. Smith, Pellatt	do	12½	12½	17	9	23	74

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
MIDDLESEX.		[15]	[17]	[20]	[10]	[38]	[100]
CARADOC AGR. SOCIETY. *Judges—H. Scott, Ottawa, and R. H. Harding, Thorndale.*							
Dougald Campbell, Mt. Brydges	Dooley	14½	13½	19	10	32½	89½
Alex. Lamont, do	do	14	15½	19	10	29½	88
D. M. McNeill, Strathroy	do	13	14½	16½	8½	32½	85
D. A. McNeill, do	do	12½	15	15½	10	29½	82½
Weld Bros., Mt. Brydges	do	13	14	14	8½	29½	79
Clarence Trott, do	do	14½	15	15	9	25	78½
J. I. Crawford, Strathroy, R.R.1	do	10	14	15	10	28½	77½
A. Graham, do	do	12½	13	16	7	28½	77
A. McLean, Mt. Brydges, R.R.2	do	14	15	16	9	22½	76½
J. S. Walker, do R.R. 2	do	11	7½	14	10	27½	70
MUSKOKA							
GRAVENHURST AND MUSKOKA AGR. SOCIETY. *Judges—H. Scott & J. M. Dalgleish, Ottawa.*							
Wm. White, Gravenhurst	Delaware	15	16½	19½	10	29	90
Josh Short, do	Empire State	15	16	20	10	27	86*a*
W. H. Trincombe do	do	15	14	18	10	28½	83½*a*
Wallace Ruttan, do	Green Mountain	14½	15½	19	10	22	81
Sherman Polmateer, do	Empire State	14½	13	17	10	28	80½*a*
Miller Bros., Gravenhurst	Canadian Standard	15	15	15	10	26½	79½*a*
G. Miller, do	Can. Standard & Can Beauty	13	13	16	9	25½	74½*a*
Carl Laycock, do	The Great Divide	11	14	15	8	25½	71½*a*
MEDORA AND WOOD AGR. SOCIETY. *Judges—H. Scott and J. M. Dalgleish, Ottawa.*							
Fred Knight, Brackenrig	Gold Coin	14½	16½	18	10	24½	83½
Hugh Foulkes, Port Carling	Early King	15	15½	16	10	24	78½*a*
Alex. Ennis, do	Gold Coin	13	14	16½	10	24½	78
Thos. Aikens, do	Pride of Aristook	12	11½	14½	10	26	72*a*
R. C. Butler, Point Kaye	Green Mountain	11	11	16	10	23½	71½
Gordon Fraser, Port Carling	do	13	13	15	10	20	71

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
MUSKOKA—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
N. MUSKOKA AGR. SOCIETY.							
Judges—H. Scott and J. M. Dalgleish, Ottawa.							
Wm. Sinclair, Huntsville	Green Mountain	15	14½	18	10	34	91½
E. W. Tipper, Ravenscliffe	do	15	15	19	10	29	88
F. A. Cochrane, Huntsville	Delaware	14½	14	15	10	28½	82
W. H. Bray, do	Puritan	14	14½	16	10	28	80½*a*
Jno. Turnbull, Canal	Green Mountain	13	14	16½	10	25	78½
Jos. E. May, Huntsville	Amer Wonder	14	14½	12	10	29½	78*a*
S. J. Ware, Canal	Green Mountain	14½	14	15	10	23½	77
H. Simons, Martin's Siding	Late Puritan	14½	15	17	10	21	75½*a*
G. B. Richards, Huntsville	Amer. Wonder	13½	14	13	10	24½	73*a*
S. MUSKOKA AGR. SOCIETY.							
Judges—H. Scott and J. M Dalgleish, Ottawa.							
Wm. Naismith Falkenburg	Dooley	14½	17	19	10	30½	91
J. Byron Kaye, Bracebridge	Green Mountain	14½	14	18	10	28	84½
Dan Nicholls, do	Empire State	14	15½	18	10	28½	84*a*
H. L. Goltz, Bardsville	Gold Coin	13	15	16½	10	26	80½
Hy. Richards, Bracebridge	Delaware	2	15	17½	9	26½	80
Campbell and Richards, Alport	do	13	11½	16	9½	26½	76½
H. E. Beaumont, Bracebridge	Empire State	13	10	16	10	28	75*a*
STEPHENSON AND WATT AGR. SOCIETY.							
Judges—H. Scott and J. M. Dalgleish, Ottawa.							
Hugh Patterson, Utterson	Delaware	13½	15	16½	10	34	89
Leslie Bunn, Ullswater	Bruce	14	15½	18	10	25½	81*a*
Jos. Weir, Utterson, R.R. 1	Green Mountain	13	14½	12	10	31	80½
Hy. Creasor, Ullswater	Davies Warrior	13½	13½	16	9	23	75
J. W. Simpson, Parkersville	World's Wonder	13½	14	16	10	19	70½*a*
NIPISSING.							
STURGEON FALLS AGR. SOCIETY.							
Judge—R. R. Hurst, Toronto							
L. Champagne, Sturgeon Falls		12½	15½	14	9½	31½	82½
Jno. Woods, Verner, R.R. 1	Green Mountain	11½	15½	18	10	26¾	81¾
Peter Steepe, do R.R. 1	do	11½	15	15	10	27½	79
Eugene Leblanc, Sturgeon Falls		10½	14½	14	10	29¾	78¾
Jno. Walker, Verner, R.R. 1	Green Mountain	11	9	17	7½	34	78½
R. A. Graham, do R.R. 1	Irish Cobbler	11	14	15	9½	27¾	77¼
Arcade Leblanc, Sturgeon Falls	Early Rose	11½	13	15	10	26½	74*a*
M. J. Steepe, Verner R.R. 1	Green Mountain	13	12	17	6	25¾	73¾

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
NIPISSING—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
VERNER AGR. SOCIETY.							
Judge—R. R. Hurst, Toronto.							
Albert Gagnon, Verner, R.R. 1	Green Mountain....	12½	15	17	9	33	86½
H. Filiatrault, do	do	11	12	16	10	35¾	84¾
Omer Poitra, do R.R. 1	do	13½	9	18½	9	34½	84½
Jas. B. Leach, do R.R. 1	Carmen No. 1.....	12	1	16	9	32	84
Geo. Demers, do R.R. 1	Green Mountain....	11	15½	14	6½	31	78
Albert Herard, do R.R. 2	do	12½	16	15	8	25¼	76¾
Henri Demers, do R.R. 1	do	10½	16	16	8	25½	76
Theophil Gagnon, do R.R. 1	do	10	15½	13½	10	26¾	75¾
Francis Beaudry, do R.R. 1	do	9½	15½	15	8	24¾	72¾
ONTARIO.							
SCOTT AGR. SOCIETY.							
Judge—F. F. Reeves, Humber Bay.							
W. J. Rynard, Zephyr.	Green Mountain....	11½	16	18½	9½	37	92½
Amos Snowden, do	.....	14	10	17	10	34	83*a*
Lorne Bagshaw, Uxbridge, R.R. 2.....	Gold Coin.....	11	11	14	10	36	82
W. H. Taylor, Pefferlaw, R.R.1	Emmanuel.....	13	10	17	8	33	79*a*
Bert Lockie, Zephyr	Green Mountain....	11	11	16	10	29	77
PARRY SOUND.							
ARMOUR, RYERSON AND BURK'S FALLS AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore.							
E. H. Alexander, Royston.....	Amer. Wonder.....	15	16	19	10	34	92*a*
D. Mitchell, Burk's Falls.....	Gold Coin.....	12½	15	17	10	36	90½
J. T. Smith, Sterling Falls.....	do	13	13	17	10	36	89
Jos. Bell, Burk's Falls.....	Beauty of Hebron..	11	13	17	10	35	84*a*
Jos. Varcoe, do	do ..	12½	14	17	10	32	83½*a*
Alex. Kennedy, Sterling Falls..	Green Mountain....	13	13	16	10	31	83
S. R. Alexander, Burk's Falls	Irish Cobbler.....	12	13	16	10	31½	82½
Jos. Andrews, do	Green Mountain....	12	12	15	7	36	82
M. Marsden, do	Empire State.....	13	14	16	10	28	79*a*
Jas. Webber, do	Elephant.....	10½	10	14	9	33½	75*a*
J. H. Doherty, Midlothian.....	Beauty of Hebron..	10	11	15	10	26½	70½*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield.	Totals of scores.
PARRY SOUND—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
CHRISTIE AGR. SOCIETY.							
Judge—J. M. Dalgleish, Ottawa.							
Earl Jones, Broadbent	Green Mountain	14	16½	17	9	33½	92
W. H. Burns, Orrville	do	12½	15½	17	10	32	87
Ed. White, do	do	12	14	15	10	31	82
M. H. Harker, do	do	13½	16	18½	10	23	81
Jno. Dawson, Maple Lake	do	12½	14	18½	8½	26	79½
Jas. White, Orrville	Farmer	12½	14½	15	9½	28	77½*a*
Emerson White, do	Green Mountain	13	14½	19	8	21½	76
F. E. Forbes, Broadbent	do	13	14	12	9	21½	75½
Jos. Harmon, Orrville	do	11½	13	15	8½	22½	71
Art. Thompson, do	do	11	15	17	8½	19½	71
E. Healey do	do	11	14	16½	8½	21	71
LORING AGR. SOCIETY.							
Judges—J. M. Dalgleish, Ottawa and W. Scarf, Toronto.							
J. H. Bain, Loring		14	16½	19½	9½	20½	88*a*
J. R. Bain, do	Carmen No. 1	14	14½	19½	9½	30	87½
Jas. Smith, do		14	16	19	7	30½	84½*a*
Richard Yeo, do	Beauty of Hebron	12	15½	18½	8	28	80*a*
Dan. Sinclair, do	Early Exeter	10	15	18	8	30½	79½*a*
Jno. Smith, do	do	13½	15½	18½	8½	21	75*a*
MACHAR AGR. SOCIETY.							
Judges—A. R. Sykes Ottawa, and W. Scarf, Toronto.							
J. S. Cale, South River	Green Mountain	11	14	20	10	31½	86½
A. McCoig, do	do	13	15	14	10	34	86
Alex. Bow, do R.R. 1	do	11	15	13	10	36	85
T. Bottomley, do	Early Handy	15	14	16	8	32	83*a*
John Solm, do	Green Mountain	12	15	15	10	29½	81½
Andrew McKee, South River, R.R. 1	do	12	13	16	10	29½	80½
Jas. Wilson, do	do	12	13	15	8	30½	78½
A. R. Hearn, do	do	12	12	16	10	28	78
Jas. Hawthorne, Midford	do	12½	10	15	9½	30	77
F. J. Hearn, South River	do	12	11	15	10	28½	76½
Jos. McGuire do	do	12	10	13	10	24½	74½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
PARRY SOUND—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
MAGNETAWAN AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore.							
Wm. Keppy, Spence	Beauty of Hebron	15	15	18	10	33½	89½*a*
A. W. RRaaflaub, Magnetawan	Delaware	14	14	17	9	35	89
Jas. Stewart, do	Green Mountain	15	15	17	10	30	87
T. W. Whalley, do	Delaware	10	14	17	10	35	86
Jas. Burton, do	Green Mountain	13½	12	15	9½	32½	82½
S. E. Morris, do	Early White	11	12	17	10	34	82*a*
Wm. Veitch, Spence	Beauty of Hebron	9	13	14	10	34½	78½*a*
T. E. Stewart, Magnetawan	Early White	13	13	17	10	26	77*a*
Julius Wurm, Port Carmen	Gold Coin	13	11	15	6	31½	76½
Frank Stewart, Magnetawan	Delaware	11½	12	15	7	27	72½
McKELLAR AGR. SOCIETY.							
Judge—J. M. Dalgleish, Ottawa.							
Thos. Moffat, McKellar	Irish Cobbler	13	15	18½	9	34½	90
Henry Moffat, do	Davies Warrior	12½	15	18	9	34½	89
Mark Whitmell, do	Beauty of Hebron	13	14½	19	9	32½	86*a*
Edward Moffat, do	Davies Warrior	11½	15	17	8½	33½	85½
W. E. Taylor, do	Irish Cobbler and Green Mountain	12½	15½	18	8½	29½	84
E. Buchmer, Hurdsville	Green Mountain	10½	15	17	6½	31½	80½
W. H. Moffat, McKellar	Irish Cobbler	12	15	18½	8½	26	80
Jos. H. Ball, do	Early Northern	10½	16	18	8½	25	76*a*
Wm. Watkins, do	do	13	14	18½	7½	24	75*a*
Albert Moffat, do	Irish Cobbler	10½	14½	15	8½	26	74½
C. J. McKeown, do	Davies Warrior	11½	12	17	7½	26	74
W. H. Moore, do	Beauty of Hebron	11	17	16	8½	28½	74*a*
McMURRICH AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore.							
J. P. Farrell, Sprucedale	Beauty of Hebron	14	15	18	10	34	89*a*
Marshall & Son, do	Delaware	13½	15	17	10	33	88½
Chas. Bennison, do	Early Dawn	14	15	17	9	31	84*a*
Geo. Copeland, do	Gold Coin	11½	15	16	10	31¼	83¾
A. F. Fuller, do	Empire State	14	15	19	7½	30	83½*a*
Colin Stewart, do	White Mountain	12	14	15	10	32	81*a*
Fletcher Walker, Royston	Empire State	14	16	20	6	26	80*a*
W. J. Fowler, Sprucedale	do	9	12	15	10	32	76*a*
Hy. Watson, do	Cottle's Beauty	12	9	18	10	28	75*a*
Wm. Stewart, do	Empire State	12	14	16	10	22½	72½*a*
Albert Foeller, do	Delaware	11	14	15	7	25	72
Sam Watt, do	Rochester Rose	11	11	13	10	27	70*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
PARRY SOUND—*Continued.*		[15]	[17]	[20]	[10]	[38]	[100]
PERRY AGR. SOCIETY.							
Judge—Alex. Morrison, Creemore.							
W. J. Murdy, Emsdale	Empire State	13½	15	18	10	29	83½*a*
Hy. Tebby, Sr., Fern Glen	Cottle's Beauty	13	14	14	10	32	82*a*
Arthur Jenkin, Emsdale	Can. Standard	12	13	17	8	33½	81½*a*
H. R. Hayward, Scotia Jct.	Cottle's Beauty	11½	15	15	10	31½	81*a*
G. Roberts, Emsdale	do	12	14	15	10	31	80*a*
Chas. White, do	do	13	14	10	10	33	78*a*
H. R. Westfold, do	do	13	15	16	10	25	77*a*
C. J. Rose, do	Green Mountain	8	12	13	10	33½	76½
M. Austin, Fern Glen	Cottle's Beauty	12	14	14	10	27	75*a*
R. J. Gibson, Emsdale	Davies Warrior	11	13	12	10	27½	73½
C. T. Hayward, do	Cottle's Beauty	9	13	16	10	25	71*a*
POWASSAN AGR. SOCIETY.							
Judges—A. R. Sykes, Ottawa, and W. Scarf, Toronto.							
Jno. Anderson, Powassan, R.R1	Green Mountain	14½	16	18	10	37	95½
Owen Gough, do	do	13	14	15	9	36½	87½
E. J. Purdon, do	do	13	13	17	10	33	86
Jos. Alston, do	do	12	13	19	8	31½	83½
H. J. Paul, do	do	13	15	15	10	30	83
Lloyd A. Purdon, do	do	12	14	15	10	30	81
J. D. Healy, do	Irish Cobbler	13	14	16	7	30½	80½
J. C. R. Purdon, do	Rapid Transit	11	14	16	8	30	77*a*
A. R. Goujion, do	Green Mountain	10	12	10	10	34½	76½
STRONG AGR. SOCIETY.							
Judges—A. R. Sykes, Ottawa, and Alex. Morrison, Creemore.							
Geo. H. Butson, Sundridge	Green Mountain	13	15	16	10	35	89
Jas. Prior, do	do	13½	14	16	9	36	88½
Sam McGirr, do	do	11	15	15	10	36	87
Jno. Paget, do	do	11	14	15	9	36	85
Jas. Wilson, do	do	14	14	15	8	32	83
Jno. Battrick, do	Empire State	13	12	16	8	33½	80½*a*
Geo. Frost, do	Green Mountain	14	12	17	8	29	80
Jas. Cook, do	Beauty of Hebron	12½	13	16	10	20	79½*a*
F. W. Hannaford, do	Green Mountain	11	12	16	10	30	79
Thos. Hornibrook, do	do	11	13	15	5	33½	77½
Thos. Hodgson, do	do	10	10	16	10	26	72

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit	Name of variety.	General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
SIMCOE.		[15]	[17]	[20]	[10]	[38]	[100]
UNITED TPS. AGR. SOCIETY.							
Judge—J. M. Dalgleish, Ottawa.							
J. W. LaBrash, Maple Island..	Irish Cobbler.....	13½	16	18½	9	36	93
Jas. Todd, Dunchurch.....	do	14	16	18	9	33	90
Jno. LaBrash, Maple Island...	do	13½	16	18	7	34	88½
Wm. Todd, do ...	do	13½	14½	18½	9	32	87½
David Cuspe, Fairholme.....	Beauty of Hebron..	12	12	18	7	33	80*a*
Geo. Simpson, Dunchurch....	Early Rose.....	13	14	17½	8	26½	77*a*
R. Willard, Jr. do	Savoy.....	10½	14½	15	8	29	75*a*
Walter Brear, Maple Island...	Irish Cobbler.....	11	13	16	7	27	74
Alex. Rae, Dunchurch....	Peerless Savoy.....	13½	15½	19	8	17½	71½*a*
Wm. Hamilton, do	Irish Cobbler.....	11	13	19	8	19½	70½
RAINY RIVER.							
ATWOOD AGR. SOCIETY.							
Judge—A. B. Jackson, Elmira.							
W. McKenzie, Sleemans.....	Green Mountain....	13	14½	18½	10	33	89
Carl Peters, do	Hustler.....	13	14½	18	10	33	86½*a*
W. H. Williscraft, Rainy River.	Irish Cobbler.....	14	16	17	9½	29½	86
D. A. McQuarrie, do	Green Mountain....	12	16	17	9½	29	83½
Arthur Armstrong, Sleemans...	Gold Coin.....	13	14	18	4	29½	78½
Garnett Byrnes, Rainy River..	Irish Cobbler.....	11	11	13	9	27½	71½
A. E. Hodges do ..	Ensign.....	13	12	14	9	24½	70½*a*
A. Russell, do ..	Irish Cobbler.....	11	13	16	6	26	70
RAINY RIVER VALLEY AGR. SOCIETY.							
Judge—A. B. Jackson, Elmira.							
A. J. Leveridge, Emo.....	Irish Cobbler.....	13½	16	17½	10	35	92
C. H. McCool, Devlin.....	do	14	16	17½	9½	34	91
Geo. Locking, Emo.....	do	13½	15½	18	10	33½	90½
F. W. Tummey, do	Green Mountain....	13½	16	17½	10	33	90
Chas. Lindquist, do	Comet.....	13½	15	17½	10	33	87*a*
Wm. Jewell, Big Fork.....	Irish Cobbler.....	13	14½	17	8½	33½	86½
Jno. J. Cooper, Emo.....	Delaware.....	14	15	17½	9	30½	86
W. Hamilton, Big Fork.....	do	13	13	17	10	32½	85½
Jack Larson, Aylesworth.....	Comet.....	14	15½	18	8	31½	85*a*
Wesley Harron, Emo.....	Irish Cobbler.....	13	15	16	8	31	83
Chas. Fisher, do	Green Mountain....	13	15	18	6	30½	82½
J. E. King do	Irish Cobbler.....	12½	15	16	8	30½	82
O. Cameron, do	Green Mountain....	11	12	15	10	33	81
Wm. McMuillan,do	do	11	14	15	9	25½	74½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield.	Totals of scores.
SIMCOE		[15]	[17]	[20]	[10]	[38]	[100]
Barrie Agr. Society							
Judges—H. Scott, Ottawa, Jas. Boyd, Markham							
F. J. Frankcom, Midhurst	Carmen No. 2	15	16½	19½	10	32	91*a*
R. N. Hickling, Barrie, R.R. 2	do No. 3	15	16	18	10	31½	88½*a*
Fred Carson, do R.R. 2	do No. 3	14½	15½	18	10	29½	85½*a*
W. L. Russell, Midhurst	do No. 3	13½	13	18	10	32½	85*a*
A. A. Garvin, do	do No. 1	13	14	17	10	29½	83½
Geo. Spence, do	Gold Coin	14½	13	15½	9½	30¼	82¾
Chas. Hodges, Edgar	Carmen No. 1	13	13½	17½	7½	31	82½
Jas. J. Orok, Midhurst	Gold Coin	13½	11½	16	9½	28½	79
Jas. Spence, do	do	12½	9	16	10	28½	76
Jas. Coutts, do	Beauty of Hebron	9	13	14	10	27½	71½*a*
TEMISKAMING.							
Charlton Agr. Society.							
Judges—A. R. Sykes, Ottawa, W. Scarf, Toronto.							
Oswald Attwater, Charlton	Irish Cobbler	11	15	16	10	35½	87½
S. C. Rogers, do	Green Mountain	13½	14	16	10	33	86½
Fred Pummell, do	Irish Cobbler	12	15	18	10	30	85
W. Judd, do	Early Market	13	14	16	6	35½	82½*a*
Jas. McFarlane, do	Irish Cobbler	12	14	14	7	34½	81½
Michael Whalen, do	do	11	14	15	10	29	79
T. H. Densmore, do	do	11	13	14	10	29	77
H. J. Devries, do	do	10	14	16	6	30½	76½
Pat Cuddy, do	do	11	10	12	8	29	70
Cochrane Agr. Society.							
Judge—F. W. Presant, Sault Ste. Marie.							
Jas. Hale, Cochrane	Irish Cobbler	13½	11	19	3½	31½	78½
Jno. Sarney, do	do	11½	15	18	5	28½	78
Ira Phillips, do	Green Mountain	11	11½	18½	8	28¾	77¾
A. Rowan, Clute	Early Rose	12	15½	19	7	26	77½*a*
Jos. St. Amour, Cochrane	Green Mountain	13½	9	17½	6½	30½	77
Randolph Foster, do	Irish Cobbler	10½	15	17½	5	28½	76½
Oscar Sigouin, do	Green Mountain	12½	9	18½	6	29	75
G. Cowan, do	do	12½	7	18	8	29	74½
Neil McPhee, do	Irish Cobbler	12½	7	19	3½	30½	72½
Alfred Hewson, do	do	7½	15½	14½	8	26½	72
Andy Sigouin, do	Green Mountain	11½	7	18	5½	29½	71½
F. F. T avis, do	Beauty of Hebron	11½	7	13½	10	30	70*a*

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	Apparent yield.	Totals of scores.
TEMISKAMING.—*Con.*		[15]	[17]	[20]	[10]	[38]	[100]
ENGLEHART AGR. SOCIETY. *Judge—W. Scarf, Toronto.*							
Jno. Allen, Heaslip	Snowflake	14	15	17	8	37½	89½*a*
A. W. Skinner, Englehart	Green Mountain	12	14	18	8	37	89
Harold Anyan do	Gold Coin	12	15	16	8	37½	88½
T. S. Woolings, do	do	12½	13	18	10	34	87½
D. Kerrigan, do	Green Mountain	13½	14	17	10	31½	86
Wm. Pollock, do	Gold Coin	15	14	17	8	31	85
Geo Hannan, Heaslip	Irish Cobbler	12	13	17	10	32	84
Mrs. E. Smith, Englehart	Gold Coin	13	13	15	10	32½	83½
Jas. Hannan, Heaslip	Irish Cobbler	12	13	17	10	31	83
E. Winlaw, do	Green Mountain	12	12	18	10	30	82
Albert Hayes, Wawbewawa	Delaware	12	11	16	9	28	76
Hy. Blackburn, do	Gold Coin	11	12	15	10	28	76
R. H. Emrick, Heaslip	Irish Cobbler	11	13	14	7	29	74
Hy. Johnston, Englehart	Green Mountain	12	10	14	6	30	72
MATHESON AGR. SOCIETY. *Judge—F. W. Presant, Sault Ste. Marie.*							
Fred. McMullan, Matheson	Green Mountain	13½	15½	19	6½	28	82½
Walter Kerstine, do	G. M., I. Cobbler	13½	13½	19	5	29	80
Walter Monahan, do	Green Mountain	9	16	17½	9	27½	79
Frank Buckindale, do	Eureka	12½	13½	17	5	29	77
Thos. Waldren, do	Green Mountain	9	14	16	7½	29½	76
Ed. Monahan, do	Irish Cobbler	8½	14	17½	3½	29	72½
THUNDER BAY. OLIVER AGR. SOCIETY. *Judge—R. R. Hurst, Toronto.*							
Percy Trotter, Murillo	Early Michigan	14½	16¾	19¼	9¾	35½	93¾*a*
R. B. Martyn, do	Irish Cobbler	14¼	16¾	19½	9½	33¼	93¼
Roy Bingham, do	Carmen No. 1	13½	16¼	16	9¾	35	90½
Jas. Stevenson, do	Irish Cobbler	14½	16¼	19¼	9¾	30½	90¼
Jno. McDonald, do	Carmen No. 1	14½	16¼	19¼	9¾	30	89¾
Cecil Scott, do	do	14¼	16	19¼	9¾	29½	89
R. R. Everett, do	Green Mountain	12¾	15¼	16	8¾	35½	88¼
E. E. Thomas, do	Carmen No. 1	14½	16	19	9¾	28½	87¾
Albert Gorton, do	do	14½	16½	18½	9¾	28¼	87½
Jno. Fenton, do	do	14¼	16½	18¾	9¾	27¼	86½
Geo. Munroe, do	do	14	16	17¼	9¾	27¾	84¾
Alex. Reid, do	Royal Russet	14	16½	12	9¾	33¾	84*a*
Thos. Hughes, do	Irish Cobbler	11½	13¾	15	9¾	33	83
Sam. McNally, do	Carmen No. 1	14½	16	19¼	9¾	23¼	82¾
Herb. McNally, do	Irish Cobbler	14¼	16¼	14	9¾	28¼	82½
Harvey Garton, do	Early 6 Weeks	14¼	13½	19	9½	26½	80¾*a*
Hugh Rice, do	Early Michigan	11½	13	15¼	8¾	32¾	79¼*a*
Alf. Felker, do	Irish Cobbler	11½	12½	14	9	32¼	79¼
Alex. Trotter, Baird	do	12¼	12½	15¾	8½	29¼	78¼
Walker McNally, Murillo	Carmen No. 1	10¼	16½	15¼	9¾	26	77¾
Wm. Fenton, do	do	14	15¼	12	9¾	26½	77½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
THUNDER BAY.—*Con.*		[15]	[17]	[20]	[10]	[38]	[100]
OLIVER. AGR. SOC.—*Con.*							
Ross McKenzie, Murillo	Irish Cobbler	11½	14	15¼	6	30½	77¼
Wm. Sim, do	W. Elephant	15	11¼	13	9¾	29½	76½*a*
C. B. Hill do	Green Mountain	11¼	13½	12	9¾	29¾	76¼
Frank Cook, do	do	14¼	8½	17	9½	27	76¼
Jos. Berube, do	Carmen No. 1	11½	15½	10	9¾	28½	75¼
Jno. Oster, do	Rapid Transit	9¾	10	9½	9¾	37¼	74¼
M. Hennesy, do	Davies Warrior	11½	11¼	15	8½	27¾	74
Darcy Vaillant, do	Amer. Wonder	11½	14½	10	9½	29½	73*a*
Thos. Yelland, do	Carmen No. 1	11½	11	10½	9¾	28½	71¼
WEST ALGOMA AGR. SOCIETY.							
Judge—R. R. Hurst, Toronto.							
Jas. Wilson, Fort William	Carmen No. 1	13	15½	17¼	9¾	31¼	86¾
J. R. Hutchison, Slate River	Irish Cobbler	12½	16	17	10	30	85½
A. Heitanen, Box 36, Port Arthur	Irish Cobbler	12¾	16¼	17	9¾	28½	84¼
C. Hanna, Slate River	Carmen No. 1	12½	16	16¾	9	29	83¼
Jas. Tonkin, Fort William	Irish Cobbler	12	14½	15	9¾	27½	78¾
F. Bloom, Port Arthur	Carmen No. 1	12½	13½	15	9¾	27¾	78½
S. A. Perrier, Baird	do	12	14	15	9½	27½	78
Albert Cork, Port Arthur	do	12¼	10¼	13¾	9¾	30¼	76¼
G. McLaren, Box 556, Fort William	Delaware	12¾	16	13	8¾	24¼	74¾
M. Swards, Fort William W.	do	13	16	13	8½	24	74½
G. F. Scholefield, Ft. William	Gold Coin	10¼	14	15	9¾	24½	73½
E. T. Ross, Port Arthur	Irish Cobbler	10¾	15¼	14	8	23½	71½
WELLAND.							
FENWICK AGR. SOCIETY.							
Judges—C. Aymer, Humber Bay, A. B. Jackson and A. T. Davidson.							
Jacob M. Haist, Ridgeville, R.R. 1	Green Mountain	13	15	19	10	30	87
M. Stertzinger, Fenwick, R.R. 5	Dakota Red	13½	16	18	10	27	82½*a*
J. H. Haist, Fenwick, R.R. 5	Delaware	12	15	17½	8	27	79½
Geo. Haist, Fonthill	Davies Warrior	12½	14	17	8	27	78½
Albert Haist, Fenwick, R.R. 5	Green Mountain	14	15	16	7	25½	77½
Geo. Kappler, Fenwick	Delaware	12	15½	18	10	21½	77
Walter Hall, do	Carman No. 9	12	13	15	8½	30¼	76¾*a*
Clemens Bros., do R.R.5	Dooley	10	15	15	6½	30	76½
Jno. Stertzinger, do R.R.5	Green Mountain	11½	14½	16½	9½	23½	75½
Asa E. Haist do R.R.5	Sir Walter Raleigh	13	12	20	9	23	75*a*
A. E. Howell, do R.R.5	Green Mountain	12	13½	16	8½	24½	74½
H. Stertzinger, do R.R.5	do	12½	14½	17½	9½	20	74
Dan Haist, Fonthill	do	10	15	18	6½	23	72½
F. C. Haist, Ridgeville, R.R. 1	Hustler	13	12	18	8	23	72*a*
P. J. Bea, do R.R. 1	Green Mountain	12	13	17	7	21½	70½
A. O. Haist, Fenwick, R.R. 5	do	11	14	14	6	25	70

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	*General appearance.	Freedom from blight and insects.	Method and thoroughness of cultivation.	Purity of variety.	†Apparent yield.	Totals of scores.
WELLINGTON.		[15]	[17]	[20]	[10]	[38]	[100]
ERIN AGR. SOCIETY.							
Judge—A. R. Sykes, Ottawa.							
Jas. McKitrick, Orton	Green Mountain	13	13	17	10	35	88
Fred McMillan, Hillsburg	do	13½	14	16	10	34	87½
J. L. Overland, Erin	do	14	13	16	10	33	86
D. S. Sinclair, do	do	13	13	17	10	32	85
McFee Bros., do	do	13	12	17	10	31	83
Geo. Overland, Orton	do	13	12	16	10	31	82
Morgan Graham, Erin	do	13	14	16	10	27	80½
R. D. Nodwell, Hillsburg	Irish Cobbler	12	14	18	10	26	80
Mack Leitch, Guelph	Green Mountain	12	13	14	10	31	80
S. W. Bingham & Sons, Hillsburg	do	13	11	17	10	28	79
Jas. Nutloy, Erin, R.R. 1	do	12	10	12	10	29	73
WENTWORTH.							
ANCASTER AGR. SOCIETY.							
Judge—Jno. Tucker, Ottawa.							
G. M. Brown, Jerseyville, R.R.1	Green Mountain	13½	15	18	9½	30	86
W. E. Shaver, Ancaster, R.R. 1	do	13	15	18	9½	28	83½
N. W. Shaver, do	Dooley	12	15	19	10	26	82
W. H. English, do R.R. 1	Noxall	13¾	15½	18	9¾	24	79*a*
J. A. McNivan, do R.R. 2	Comet	13	15	18	9½	24	77½*a*
Edward Lyons, do	Sir Walter Raleigh	13	15	20	9	22	77*a*
Jno. Pickard, do	Green Mountain	12½	15	20	9	18½	75
Ward Rolefson, do R.R. 1	do	8	15	18	9½	23	73½
T. G. Brown, do	do	8½	15	17	9	23	72½
Jas. Oakes, do R.R. 2	Isle of Jersey	11½	15	15	9½	23½	72½*a*
YORK.							
RICHMOND HILL AGR. SOCIETY.							
Judge—A. T. Davidson, Ottawa.							
Peter Jones, Maple, R.R.	Delaware	14	16	18	9	32	89
Albert Jones, do R.R.	Irish Cobbler	13	14	19	10	31	87
J. S. McNair, Elgin Mills	do	11	13	16	9	24½	73½
Wm. Woods, Maple, R.R.	do	10½	16	12	8	26½	73
Chas. Jones, do R.R.	Dooley	10	14	18½	5	22½	70

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

MANGELS.

Competitors in Order of Merit.	Straightness of rows.	Method of seeding.	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
GREY.	[5]	[5]	[10]	[10]	[10]	[10]	[15]	[35]	[100]
KEPPEL AGR. SOCIETY.									
Judge—Wm. Hudd, Shelburne									
Adam Taylor, Kemble	5	5	8	10	10	7	12	33	90
Jno. McGregor, do	5	5	9	10	10	8	12	30	89
Geo. McKenzie, do	5	5	9	10	10	8	13	28	88
T. B. Danard, do	5	5	8	10	10	7	12	30	87
Sam. Perkins, do	5	5	8	10	10	6	11	30	85
Jno. Taylor, do	5	5	8	10	10	6	11	24	79
Morris Bedell, do	5	5	8	10	10	6	12	20	76
M. Sutherland, do R.R. 2	5	5	8	10	9	7	12	18	74
Douglas Davidson do	4	5	9	10	9	8	9	18	72
Lie Hurlburt do R.R. 2	5	5	10	10	10	8	10	13	71
YORK.									
SCARBORO AGR. SOCIETY.									
Judge—D. I. McClure, Toronto									
W. G. Rennie, Agincourt	4	4	9	9	9	10	14	33	92
W. Clarke, do	4	4	9	8	9	9½	14	33	90½
Jas. Scott, do	4	4	9	9	9	9	14	32	90
J. M. T. Weir, do	4½	4	8	9	9	9	13½	32	89
W. A. Latham, do	4	4	9	9	9	8	14	30	87
H. K. Clark, do	4	4	8	9	9	9	13	30	86
Gordon Paterson, do	4½	3½	8	9	9	8	12	30	84
W. A. Paterson, do	4	3	8½	9	9	8½	11	30	83
Wm. White, Scarboro Jct	3½	4	7	8½	9	8	13	29	82
A. E. Kennedy, Agincourt	4	3	7	7	9	9	12½	30	81½
Wm. Gough, Milliken	4	3½	8	8½	8	9	11	29	81
W. D. Brown, Agincourt	4	4	8	9	9	8	11	27	80
F. Yeomans, do	3½	3½	8	8½	8½	8	12	27½	79½
J. Underwood, Malvern	3½	3½	8	8	9	8	12	27	79
H. Brumwell, Highland Creek	4	3½	8	8	9	9	11	26	78½
E. Richards, Scarboro Jct	3½	4	8	7	9	8	12	26½	78

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

TURNIPS.

Competitors in Order of Merit.	Straightness of rows.	Method of seeding.	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
BRANT.	[5]	[5]	[10]	[10]	[10]	[10]	[15]	[35]	[100]
PARIS AGR. SOCIETY.									
Judge—Jas. Pullin, Woodstock.									
Allan Edgar, Paris	4	4	9	8	8	8	12	29	82
W. D. Barker, do	4	4	10	10	8	7	11	27	81
J. H. McGill, Princeton	4	4	9	9	8	7	13	26	80
J. R. Moyle, Paris	4	4	8	8	7	8	12	28	79
J. B. Cruikshank, do	4	4	9	9	7	8	13	24	78
Robt. Faskin, do	4	4	7	7	9	8	12	26	77
Wylie Guthrie, do	4	4	8	9	8	8	11	24	76
D. A. Holmes, do	4	4	9	8	9	8	13	20	75
Geo. Bone, do	4	4	8	8	6	8	10	26	74
Jno. Doyle, Paris Station	4	4	8	9	7	7	11	23	73
Geo. Parkhill, Paris	3	4	8	9	6	6	10	26	72
GREY.									
PROTON AGR. SOCIETY.									
Judge—D. I. McClure, Tor nto									
R. W. Fowler & Sons, Dundalk, R.R. 2	4	4	9	9	9	9	14	33	91
Jas. McPherson & Sons, Dundalk	3½	4	9	9	9	9	14	33	90½
P. J. Fernanne, Dundalk, R.R.2	4	3½	8½	9	9	9	14	32	89
Amos Clarke, do	4	4	8	9	9	9	13½	32	88½
Jas. A. Fraser, do R.R.2	4	4	9	9	9	9	13½	30	87½
Robt. Kinnell, Hopeville, R.R.1	4	3½	8½	9	9	9	13	30	86
W. E. Bell, Dundalk, R.R.4	4	4	8	9	8	9	13	29	84
Loyd McQuarrie, do R.R.2	3½	4	8½	8½	9	9	13	28	83½
Richard Cronnin, Corbetton	3½	3½	7	7	9	9	13	31	83
Geo. Bell, do R.R. 3	4	4	9	9	7	9	12	28	82
W. A. Goodfellow, Dundalk	3½	3½	7	7	9	9	13	29	81
Thos. Walton, do R.R. 2	4	3½	8	7	9	9	12	28	80½
Jno. Rice, do	4	4	7½	7	9	9	12	27	79½
I. W Hanna, do	3½	4	8½	7	9	8	13	26	79
THUNDER BAY.									
WHITEFISH AGR. SOCIETY.									
Judge—J. McKay, Dryden.									
R. Vance, Hymers	2	4	9½	9½	9	9	14	24½	81½
H. Hansen, do	4	4	9	9	6	8½	13	21	74½
A. G. Forrest, do	2½	4	7	8½	7	8½	14	22¾	74¼
P. Tessolin, do	5	4	7½	8½	5½	7½	13	21¾	72¾
H. Wheal, do	4½	4	8½	9	4	7	12	22¾	71¾
A. T. Digby, do	4	3	6	8	7	7	12	24½	71½
WELLINGTON.									
MT. FOREST AGR. SOCIETY.									
Judge—Alex. Kague, Teeswater.									
Jno. D. Ross, Mt. Forest	5	4½	9	9	9	9	13	30	88½
Jno. Canfield, do R.R. 2	4½	4½	9	9	8	9	13	29	86
Anson Kirkness, do	5	4	9	9	9	8½	13	28	85½

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS OF COMPETITIONS IN STANDING FIELD CROPS—Con.

TURNIPS.

Competitors in Order of Merit.	Straightness of rows.	Method of seeding.	Proper thinning and cleaning.	Thoroughness of cultivation.	Freedom from insects and diseases.	Purity and uniformity of roots.	Shape and quality of roots.	Yield of roots per acre.	Totals of scores.
WELLINGTON—*Continued.*	[5]	[5]	[10]	[10]	[10]	[10]	[15]	[35]	[100]
MT. FOREST AGR. SOC.—*Con.*									
Thos. Dingwall, Holstein.....	4½	4½	9	9	9	8	11	30	85
Daniel Murphy, do	4½	4	8	8½	8	9	12	29	83
Jno. Ghent, do	4½	4	8	8	9	8	12	29	82½
T. R. Bowman, do	4½	4	8	8	8	8½	12	29	82
Marshal Wright, do	4½	4	7	7½	9	8½	12	29	81½
Jno. Hershey, do	4	4	8	8	8	8	12	29	81
Brown Bros., do	4½	4	5	6	9	7	13	30	78½
Erwin Robb, do	4	4	7	7	9	8	11	28	78
Geo. W. Crow, do	4½	4	8	8	6	8	11	28	77½
Norman McLeod, Harriston, R.R. 3.....	4	4	6	6	8	8	12	29	77
David Gillies, Mt. Forest.....	4½	3½	6	7	8	8	11	28	76
ROCKWOOD AGR. SOCIETY.									
Judge—Jas. McLean, Richmond Hill.									
Lorne Allan, Rockwood, R.R.1	5	5	9	10	10	7½	12	32	90½
Gerald Kean, Guelph, R.R. 2	5	5	10	9	9	8	13	31	90
A. F. Auld, do R.R. 2	4½	4½	9	8	10	8	13	32	89
Jos. Gahan, Rockwood, R.R.5	5	5	10	10	8	8	12	30	88
Wm. Gordon, do	4	5	9	10	9	7½	12	31	87½
Chas. Benham, do R.R. 5	4½	5	9	10	8½	7	12	31	87
Jos. Marsden, do	4½	4½	9	9½	8	8	12	31	86½
H. McLeod, do	4½	4	8	9½	9½	7½	12	30½	85½
T. G. Hutchinson, do R.R. 1	4½	5	9	10	6½	7½	11½	31	85
Wm. Wishart, do	4½	5	8½	9½	8	7	11	29½	83
B. Shultis, do	4½	4½	8½	9	7	7	11½	30½	82½
Jno. J. Cummins, do R.R. 3	4½	4	7	7½	9	7	12	28	79
YORK.									
MARKHAM AND E. YORK AGR. SOCIETY.									
Judge—Wm. Hickson, Bobcaygeon.									
D. J. Tran, Claremont, R.R. 2	5	5	8½	10	7	8½	13	29½	86½
R. R. Johnston, Stouffville....	4	5	9	10	7	8	13	29	85
W. G. Maxwell, Markham....	5	5	9	9½	7	8	12	28¾	84¼
W. G. Rennie, Agincourt.....	5	5	8½	10	7	8	13	26¼	82¾
Jas. Torrance, Markham..	5	5	8	10	7	8	13	25¾	81¾
W. Thompson & Sons, do ..	5	5	8	9	7	8	13	25½	80½
Jno. H. Gowland, do R.R.2	4½	5	7	9	7	8	12½	27	80
W. W. Boynton, Gormley R.R..	4½	5	8	6	7	8	13	27	78½
Jas. A. McCraight, Markham, R.R. 1.....	4	5	8	10	6	8	12	25¼	78¼
J. W. Warriner, Markham, R.R. 2.....	5	5	7	8	7	8	12	25½	77½
J. I. Balsdon, Markham..	5	5	8	8	7	8	12	26	77
Gideon Brownsberger, do ..	4	5	9	9	7	8	12	22½	76½

NOTE.—The figures in brackets at the top are maximum possible scores.

GRAIN FROM STANDING FIELD CROP COMPETITIONS.

Prize Winners at the Central Canada Exhibition, 1921

Prize Won	Competitors and Addresses	Variety
Oats	*Grain in Sacks*	
1st	F. R. Gourlay, Kinburn	O. A. C. No. 72
2nd	H. L. Goltz, Bardsville	O. A. C. No. 72
3rd	W. G. Farrell, Winchester, R.R. 3	Banner
4th	Chas. Fisher, Emo	Am. Banner
5th	Arch. Greer, Mansfield	Banner
6th	F. H. Medwin, Greensville	Yellow Russian
Fall Wheat—1st	D. A. Henry, Millbrook	Dawson's G. Chaff
Spring Wheat—1st	Roy W. J. Gourlay, Kinburn	Marquis
Barley—1st	Alex. Morrison, Creemore, R.R. 2	O. A. C. No. 21
Corn (Dent)		
1st	J. D. McEwen, Denfield, R.R. 3	White Cap
2nd	John E. Adams, Russell	
Oats	*Sheaf Exhibit*	
1st	H. L. Goltz, Bardsville	O. A. C. No. 72
2nd	Garfield Kennedy, Bobcaygeon	Reg. Banner
3rd	W. G. Farrell, Winchester	Banner

GRAIN FROM STANDING FIELD CROP COMPETITIONS.

Prize Winners at the Canadian National Exhibition, 1921.

Prize Won	Competitors and Addresses	Variety
Oats	*Sheaf Exhibit*	
Division No. 1—		
1st	Wm. N. Sinclair, Huntsville	Am. Banner
2nd	H. L. Goltz, Bardsville	O. A. C. No. 72
3rd	B. Laycock, Gravenhurst	O. A. C. No. 72
4th	Omer Poitras, Verner	O. A. C. No. 72
Division No. 2—		
1st	Edgar D. Morrow, Stirling	Banner
2nd	Thos. Dunham, Campbellford, R.R. 4	O. A. C.
3rd	Garfield Kennedy, Bobcaygeon	Reg. Banner
4th	Fred Feasby, Uxbridge, R.R. 1	O. A. C. No. 72
Division No. 3—		
1st	Arch. Greer, Mansfield, R.R. 1	Banner
2nd	T. H. Medwin, Greensville	Yellow Russian
3rd	Henry A. Cowan, Mount Forest, R.R. 3	Banner
4th	A. E. Caulfield, Mount Forest	Banner
Fall Wheat		
Division No. 3—1st	Joseph McKay, Tiverton	Winter King
Spring Wheat		
Division No. 1—1st	John R. Philp, New Liskeard, R.R. 1	Marquis
Division No. 2—1st	Roy W. J. Gourlay, Kinburn	Marquis

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued*

PRIZE WINNERS AT THE CANADIAN NATIONAL EXHIBITION, 1921—*Continued.*

Prize Won	Competitors and Addresses	Variety
OATS	*Grain in Sacks*	
Division No. 1—		
1st	F. R. Gourlay, Kinburn	
2nd	Herve Filiatrault, Verner	O. A. C. No. 72
3rd	Chas. Fisher, Emo	Am. Banner
4th	B. Laycock, Gravenhurst	O. A. C. No. 72
Division No. 2—		
1st	Geo. W. Bick, Bobcaygeon	Reg. Banner
2nd	Fred Feasby, Uxbridge, R.R. 1	O. A. C. No. 72
3rd	Thos. Dunham, Campbellford, R.R. 4	O. A. C.
4th	Edgar D. Morrow, Stirling	Banner
Division No. 3—		
1st	Archie Greer, Mansfield, R.R. 1	Banner
2nd	A. and W. McKague, Teeswater, R.R. 1	O. A. C. No. 72
3rd	Chas. C. Hodges, Edgar	Banner
4th	A. B. McDonald, Glencoe	O. A. C. No. 72
FALL WHEAT		
Division No. 2—		
1st	D. A. Henry, Millbrook	Dawson's G. Chaff
Division No. 3—		
1st	Wm. A. McCutcheon, Glencoe	O. A. C. No. 104
2nd	Joseph McKay, Tiverton, R.R. 1	Winter King
3rd	Geo. R. Barrie & Son, Galt, R.R. 7	Dawson's G. Chaff
4th	Robt. E. Cowan, Galt, R.R. 3	Dawson's G. Chaff
SPRING WHEAT		
Division No. 1—		
1st	John R. Philp, New Liskeard, R.R. 1	Marquis
Division No. 2—		
1st	F. R. Gourlay, Kinburn	Marquis
2nd	Xavier Chenus, Plantagenet, R.R. 1	Red. Fife
BARLEY		
Division No. 3—		
1st	Alex. Morrison, Creemore, R.R. 2	O. A. C. No. 21
2nd	Bert Bishop, Bolton, R.R. 1	Mandscheuri
CORN (FLINT)		
Division No. 3—		
1st	A. S Maynard, Chatham, R.R. No. 3	
CORN (DENT)		
Division No. 3—		
1st	B. R. Cohoe, South Woodslee	

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued*

PRIZE WINNERS AT THE OTTAWA WINTER FAIR, OTTAWA, 1922.

Prize Won	Competitors and Addressess	Variety
OATS	*Grain in Sacks.*	
1st	T. H. Lewis, Oxdrift	Gold Rain
2nd	Dougall A. Cumming, Russell	Irish.
3rd	Luther E. Mountjoy, Burketon Jct	Irish.
4th	Garfield Kennedy, Bobcaygeon	Reg. Banner
5th	Edgar D. Morrow, Stirling	Banner.
6th	Chas. E. Bonnycastle, Campbellford	O.A.C. 72
7th	H. J. Hubbeard, Millbrook, R.R. 3	Banner
8th	F. J. Brimacombe, Orono	Banner
9th	D. A. Henry, Millbrook, R.R. 2	Banner
10th	J. H. Lockie, Zephyr	Abundance
FALL WHEAT		
1st	D. A. Henry, Millbrook, R.R. 2	Dawson's G. Chaff
2nd	T. A. Kelly, Frazerville	Dawson's G. Chaff
SPRING WHEAT		
1st	Edson Jibb, New Liskeard, R.R. 1	Marquis
2nd	Walter Galbraith, Renfrew, R R. 3	Marquis
3rd	John R. Philp, New Liskeard, R.R. 1	Marquis
4th	Roy W. J. Gourlay, Kinburn	Marquis
5th	Xavier Chenier, Plantagenet	Huron
CLOVER		
1st	T. H. Lewis, Oxdrift	Alsike
CORN (DENT)		
1st	Jas. Wellwood, Merlin	Wisconsin No. 7
2nd	Mac. L. Maynard, Chatham, R.R. 3	Golden Glow
CORN (FLINT)		
1st	R. J. Johnston, Chatham, R.R. 3	Salzer's N. Dakota
2nd	A. S. Campbell & Son, Blenheim, R.R. 2	Salzer's N. Dakota
3rd	A. S. Maynard, Chatham, R.R. 3	Salzer's N. Dakota
4th	Clarence C. West, Northwood, R.R. 3	Longfellow
5th	Stewart Campbell, Blenheim, R.R. 2	Salzer's N. Dakota

GRAIN FROM STANDING FIELD CROP COMPETITIONS—*Continued*

PRIZE WINNERS AT THE ONTARIO PROVINCIAL WINTER FAIR, GUELPH, 1921

Prize Won	Competitors and Addresses	Variety
OATS	*Grain in Sacks*	
1st	A. and W. McKague, Teeswater, R.R. 1	O.A.C. No. 72(Championship)
2nd	Samuel W. Bingham & Son, Hillsburg	Reg. Banner
3rd	Andrew Schmidt, Mildmay R.R. 1	Abundance
4th	Richard Wilton, Wingham, R.R. 1	O. A. C. No. 72
5th	W. G. Chapman, Rockwood, R.R. 3	Reg. Banner
6th	Wm. A. McCutcheon, Glencoe	O. A. C. No. 72
7th	Enoch Hill, Muncey	Banner
8th	Wm. Winer & Sons, Guelph, R.R. 3	Banner
9th	J. A. Cockburn, Puslinch, R.R. 1	Reg. Banner
10th	C. Chas. Hodges, Edgar	Banner
FALL WHEAT		
1st	Jos. Mackay, Tiverton, R.R. 1	Winter King (Championship)
2nd	Wm. A. McCutcheon, Glencoe, Box 33	No. 104
PEAS		
1st	A. Mielhausen, Lion's Head	Canadian Beauty
CORN (DENT)		
st	Jas. Wellwood, Merlin	Wisconsin No. 7.
2nd	Thos. Deslippe, Amherstburg, R.R. 1	Wisconsin No. 7.
3rd	Jno. J. Johnston, Wardsville	W. Cap Yel. Dent.
4th	Mac. Maynard, Chatham	Golden Glow.
	Wm. A. Bailey, Amherstburg	Wisconsin No. 7.
CORN (FLINT)		
1st	Stewart Campbell, Blenheim, R.R. 2	S. North Dakota.
2nd	Clarence C. West, Northwood, R.R. 3	Longfellow.
3rd	J. A. King, Wardsville	Longfellow.
4th	H. J. Johnston, Chatham, R.R. 3	S. North Dakota.
5th	A. S. Campbell, Blenheim, R.R. 2	S. North Dakota
POTATOES.		
1st	Thos. Fothergill, Bronte, R.R. 1	Dooley.
2nd	Wm. N. Sinclair, Huntsville, Box 257	Green Mountain.
3rd	Wm. Naismith, Falkenburg	Dooley.
4th	J. W. Ackerman, Delhi	Irish Cobblers.
5th	H. L. Goltz, Bardsville	Gold Coin
TURNIPS.		
1st	Jno. D. Ross, Mount Forest, R.R. 1	Swede.
2nd	Gerald Kean, Guelph, R.R. 2	
rd	R. N. Fowler & Sons, Dundalk, R.R. 2	Swede.
MANGOLDS.		
1st	W. G. Rennie, Agincourt	

Oats.

Competitors who will thresh and keep separate grain from the fields entered in the Standing Crop Competitions.

J. L. Tolton, Walkerton, R.R. 3; Banner.
W. A. Tolton, Walkerton,; Banner.
Geo. B. Armstrong, Teeswater, R.R. 1; Banner.
S. Schmidt, Formosa, R.R. 1; Abundance.
H. Lints, Mildmay; O. .A. C. No. 72.
Wm. A. Rowand, Walkerton, R.R. 1; O. A. C. No. 72.
D. Schnurr, Shallow Lake; O. A. .C. No. 72.
Wm. Webster, Lucknow; O. A. C. No. 72.
J. D. Little, Teeswater; O. A. C. No. 72.
Thos. Atkins, Teeswater; O. A. C. No. 72.
Wm. McKenzie, Teeswater; O. A. C. No. 72.
Wm. Lembke, Wiarton, R.R. 2; O. A. C. No. 72.
Chas. W. Loney, Wiarton; Banner.
Robt. Swanton, Flesherton; O. A. C. No. 72.
Chas. Huddy, Priceville, R.R. 3; O.A.C. No. 72.
J. W. Davis, Markdale, R.R. 4; O.A.C. No. 72.
Robt. Chard, Proton, R.R. 3; O.A.C. No. 72.
Ed. Davis, Markdale, R.R. 4; O.A.C. No. 72.
T. L. Mercer, Markdale; O. A. C. No. 72.
Earl Davis, Markdale, R.R. 4; O.A.C. No. 72.
David Foster, Markdale, R.R. 4; O.A.C. 72.
McLoughry Bros., Markdale, R.R. 4; O.A.C. 72.
W. R. Buchanan, Flesherton, R.R. 2; O.A.C. 72.
Ed. Baker, Markdale, R.R. 4; Banner.
E. Buckingham, Maxwell; Banner.
J. A. Kernahan, Maxwell, O. A. C. No. 72.
W. H. Hall, Singhampton, R.R. 1; Lincoln.
R. J. Allister, Feversham.
Geo. McDonald, McIntyre; Granary Filler.
Blake Cox, Frankford; Rennie's E. Yielder.
Jas. Hinchcliffe, Belleville; Banner.
H. Moore, The Ridge; O. A. C.
D. Maitland, The Ridge; O. A. .C 72.
D. Henderson, The Ridge; O. A. C. . .
A. W. Griffith, Watford; Banner.
E. A. Kidd, Watford; Banner.
Thos. J. Webster, Lansdowne; Banner.
R. J. R. Breckenridge, Lansdowne; O.A.C. 72.
W. H. Hunter, Napanee; Banner.
M. Hawley, Napanee; Lincoln.
Geo. W. Price, Selby; O. A. C. 72.
R. Parks, Napanee; Sensation.
C. Luther, Napanee; Banner.
H. C. Empey, Napanee; O. A. C. 72.
B. Leacock, Gravenhurst; O. A. C. 72.
Geo. York, Gravenhurst; O. A. C. 72.
Miller Bros., Gravenhurst; O. A. C. 72.
Robt. G. Young, Gravenhurst; O. A. C. 72.
C. E. Taylor, Reay; Abundance.
W. H. Tincombe, Gravenhurst; O. A. C. 72.
Jesse White, Gravenhurst; O. A. C. 72.
S. Polmateer, Gravenhurst; O. A. C. 72.
J. Short, Gravenhurst; New Stirling.
H. B. S. Palmer, Gravenhurst; O. A. C. 72.
Wm. Ruttan, Gravenhurst; Rennie's E. Yielder.
W. W. Morrison, Reay; Imp. Banner.
F. W. Knight, Brakenrig; O. A. C. 72.
Arch. Mitchell, Bardsville; O. A. C. 72.
L. Butler, Point Kaye; 20th Century.
E. Young, Rossmore; Yel. Russian.
T. W. Knight, Brakenrig; Imp. Scotch.
R. C. Butler, Point Kaye; 20th Century.
W. S. Mahon, Port Carling; Banner.
Thos. Aitkens, Port Carling; O. A. C. 72
Geo. Proulx, Bonfield; O. A. C. 72.
J. A. Boivin, Bonfield; O. A. C. 72.
Alex. Hume, Campbellford, R.R. 3; O.A.C. 72.
C. E. Bonnycastle, Campbellford, R.R. 3; O. A. C. 72.
Wm. Rannie, Campbellford, R.R. 3; O.A.C. 72.
A. H. McKelvie, Campbellford, R.R. 4; Banner.
Mrs. W. W. Whitton, Campbellford, R.R. 3; Mammoth Cluster.
J. Runciman, Warkworth; O. A. C. 72.
Jas. White, Orrville; O.A.C. 72.
W. H. Burns, Orrville; O. A. C. 72.
M. H. Harker, Orrville; O. A. C. 72.
John Lawson, Maple Lake; Banner.
Jno. Teneycke, Broadbent; O. A. C. 72.
Wm. Magee, Broadbent; Banner.
A. A. Healey, Orrville; O. A. C. 72.
J. A. Morrison, Maple Lake; Banner.
C. J. McKeown, McKellar; O. A. C. 72.
Jos. H. Ball, McKellar; O. A. C. 72.
Thos. Moffatt, McKellar; O. A. C. 72.
Wm. Watkins, McKellar; Mam. Cluster.
R. S. Jackson, McKellar; O. A. C. 72.
John Frasier, Stratford, O. A. C. 72.
Alex. Home, Gads Hill, R.R. 1; O. A. C. 72.
W. W. Ballantyne, Stratford, R.R. 3; O.A.C. 72.
W. H. Douglas, St. Pauls; Yel. Russian.
Jacob Litt, Sebringville; Yel. Russian.
A. Cook, Stratford, R.R. 1; Amer. Banner.
Geo. Faulhafer, Stratford, R.R. 1; Am. Banner.
Henry Pitts, Stratford, R.R. 1; O. A. C. 72.
Geo. Ross, Stratford, R.R. 1; Am. Banner.
E. W. Dunsmore, Stratford, R.R. 3; E. Yielder
Fred Dunsmore, Stratford, R.R. 2; Rennie's E. Yielder.
Ed. Zinn, Stratford, R.R. 1; O. A. C. 72.
Jno. Doering, Stratford, R.R. 1; O. A. C.
David Carroll, Gadshill; O. A. C. 72.
J. Schmidt, Stratford, R.R. 1; Am. Banner.
H. Cook, Stratford, R.R. 1; Am. Banner.
E. Sherrer, Stratford, R.R. 4; O. A. C. 72.
T. Wagner, Stratford, R.R. 1; Am. Banner.
J. E. Neeb, Stratford, R.R. 1; O. A. C. 72.
Sam'l. Chartrand, Alfred; Banner.
A. Charbonneau, Alfred; Banner.
D. Charbonneau, Alfred; Banner.
Jos. Gascon, Alfred; Banner.
D. Parisien, Alfred; Banner.
J. A. Walker, Rossmore, Yel. Russian.
J. R. Anderson, Mountain View; Industrial.
J. A. Weese, Rossmore; O. A. C. 72.
L. Wallbridge, Rossmore; Ligowa.
J. S. Barber, Rossmore; Yel. Russian.
F. Mottley, Rossmore; Yel. Russian.
J. S. Wallbridge, Rossmore; Yel. Russian.
C. R. Parliament, Ameliasburg; Yel. Russian.
E. E. Wallbridge, Rossmore; Century.

FALL WHEAT.

Competitors who will thresh and keep separate grain from the fields entered in the Standing Field Crop Competitions.

P. L. Graham, Ilderton; Dawson's G. Chaff.
Robb Bros., Ilderton; Dawson's G. Chaff.
David Rogers, St. Mary's; Dawson's G. Chaff.
Harry White, St. Mary's; Dawson's G. Chaff.
Chas. Atkinson, St. Mary's; Dawson's G. Chaff.
Wm. Harding, St. Mary's; Dawson's G. Chaff.
Robt. Ratcliffe, St. Mary's; Dawson's G. Chaff.
Thos. Young, Galt, R.R. 4; Dawson's G. Chaff.
R. E. Cowan, Galt, R.R. 3; Dawson's G. Chaff.
N. Bichtel, Hespeler; Dawson's G. Chaff.
Wm. Elliott, Galt, R.R. 7; Dawson's G. Chaff.
Jas. Brown, Galt, R.R. 7; Dawson's G. Chaff.
Jno. Brown & Son, Galt; Dawson's G. Chaff.
Wm. Scott, Galt, R.R. 7; Dawson's G. Chaff.
Geo. P. Moore, Galt, R.R. 7; Dawson's G. Chaff.
M. Scott, Galt, R.R. 3; Dawson's G. Chaff.
W. C. Shaw, Hespeler, R.R. 2; Dawson's G. Chaff.
Wm. Gillispie, Galt, R.R. 5; Dawson's G. Chaff.
Thos. Copeland, Galt, R.R. 3; Dawson's G. Chaff.
E. Kemkes, Branchton, R.R. 1; Dawson's G. Chaff.
A. G. Taylor, Galt, R.R. 7; Dawson's G. Chaff.
D. M. McLean, Puslinch, R.R. 1; Dawson's G. Chaff.
Jno. Walsh, Guelph, R.R. 2; Dawson's G. Chaff.
J. Clark & Sons, Puslinch R.R. 1; Dawson's G. Chaff.
G. Henderson, Puslinch, R.R. 7; Imp. Amber.
J. & G. W. Barclay, Guelph, R.R. 6; Dawson's G. Chaff.

SPRING WHEAT.

P. J. Farrell, Sprucedale; Marquis.
M. J. Fowler, Sprucedale; Marquis.
A. Charbonneau, Alfred; Marquis.
E. Parisien, Alfred; Marquis.
Jos. Gascon, Alfred; Red Fife.
D. Charbonneau, Alfred; Marquis.
Oscar Cox, Unionville, R.R.; Marquis.
Jas. Torrance, Markham; Marquis.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	‡Weeds in competitors' fields.
BRANT.							
PARIS AGR. SOCIETY.		[100]	[100]				
Judges—Jas. A. Cameron, Weston, and W. J. W. Lennox, Toronto.							
W. D. Barker, Paris	Reg. Banner	93½	82¾	56.1	33.1	89.2	
R. J. McCormack, do	do	93	82	55.8	32.8	88.6	15
Fred Luck, do R.R.	do	91	82¾	54.6	33.1	87.7	15
J. Martin, do	do	92	81	55.2	32.4	87.6	15
J. Weir & Sons, do R.R. 1	do	88	84¼	52.8	33.7	86.5	15, 10
D. A. Holmes, do R.R. 2	do	89½	81¼	53.7	32.5	86.2	15
D. Patton, do	do	90	80¼	54	32.1	86.1	15
John Doyle, do	do	87½	79¼	52.5	31.7	84.2	15
G. W. Haas & Son, Paris, R.R.1	do	87	78½	52.2	31.4	83.6	15
J. R. Moyle, do R.R. 4	do	89	72¾	53.4	29.1	82.5	15
P. German, St. George	Reg. Banner	83	81½	49.8	32.6	82.4	15
W. Parnell, Richwood	do	81½	83½	48.9	33.4	82.3	15
G. S. Brooks, Paris	do	82	80½	49.2	32.2	81.4	15
Jos. Blake, do R.R. 1	do	81	81	48.6	32.4	81	15, 4
A. R. Turnbull, do R.R. 4	do	80½	80	48.3	32	80.3	15, 5
R. Howell, St. George	do	86½	64¼	51.9	25.7	77.6	15, 14
A. Gilbert, Paris	do	78½	73½	47.1	29.4	76.5	15
Geo. Telfer, do R.R. 2	do	76	75	45.6	30	75.6	15
C. Lovett, do	do	79	65¾	47.4	26.3	73.7	15
BRUCE.							
PINKERTON AGR. SOCIETY.							
Judges—J. A. Kernahan, Maxwell, and W. J. W. Lennox, Toronto.							
A. Alexander, Pinkerton	Banner	85	84½	51	33.8	84.8	
E. Tolton, Walkerton, R.R. 3	do	85½	82½	51.3	33	84.3	
Garland Bros., Pinkerton	do	83½	81½	50.1	32.6	82.7	14
Jno. Mutrie, do	do	82	81	49.2	32.4	81.6	14
W. S. Keyes, do	do	83	79	49.8	31.6	81.4	14
W. J. Cruickshank, do	do	78½	80	47.1	32	79.1	
D. Pinkerton, do	do	72½	84½	43.5	33.8	77.3	1, 14
Wm. Garland, do	do	77	64	46.2	25.6	71.8	
Jno. Clancy, Cargill	do	86½	49½	51.9	19.8	71.7	14, 15
S. G. Noble, Walkerton, R.R. 4	do	84½	50	50.7	20	70.7	

NOTE.—The figures in brackets at the top are maximum possible scores.

‡See key page.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	†Weeds in competitors' fields.
CARLETON.							
CARP. AGR. SOCIETY.							
Judges—J. H. Wiggins, Kemptville, and T. G. Raynor, Ottawa.							
H. K. Hodgins, Carp	Banner	88½	90	53.1	36	89.1	
E. H. Graham & Sons, Carp	do	90	87	54	34.8	88.8	
L. Black, Stittsville	do	87	91	52.2	36.4	88.6	
G. A. Hodgins & Sons, Carp	do	85	91½	51	36.6	87.6	
W. J. Johnston & Son, do	do	88	81½	52.8	36.6	85.4	
C. G. Argue, do	do	80½	89	48.3	35.6	83.9	12
F. H. Caldwell, do	do	81	87½	48.6	35	83.6	10
G. Rivington & Son, do	do	79	85	47.4	34	81.4	
J. J. Wilson, do	do	80	78½	48	31.4	79.4	
W. G. Rivington, do	do	81½	75	48.9	30	78.9	
Geo. H. Caldwell, do	do	86	68	51.6	27.2	78.8	
F. S. Caldwell, do	do	82	71	49.2	28.4	77.6	
D. Scarf & Son, do	do	78	70½	46.8	28.2	75	1
DUFFERIN.							
EAST LUTHER AGR. SOCIETY							
Judges—Andrew Schmidt, Mildmay, and W. J. W. Lennox, Toronto.							
W. E. Turner, Grand Valley, R.R. 3	Banner	71½	76	42.9	30.4	73.3	2
W. Willmott, do	do	75	70	45	28	73	2, 15
T. R. Elgie, do	do	72	74	43.2	29.6	72.8	2, 15, 1
H. Berry & Son, do	do	70	76½	42	30.6	72.6	2
W. Richardson, do	do	71	74	42.6	29.6	72.2	2, 15
W. E. Tovell, do	do	67	76	40.2	30.4	70.6	2, 15
DURHAM.							
CLARKE TP. AGR. SOCIETY.							
Judges—Wilson Black, Stroud, and T. G. Raynor, Ottawa.							
F. J. Brimacombe, Orono	Banner	87	86	52.2	34.4	86.6	15
E. E. Patterson, do	do	83	87½	49.8	35	84.8	
C. A. Chapman, do	do	85	84	51	33.6	84.6	15
J. T. Chapman, do	do	86	80	51.6	32	83.6	10, 11
C. L. Powers, do	do	84	79	50.4	31.6	82	15
A. A. Gibson, do	do	80	74	48	29.6	77.6	11, 10

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	‡Weeds in competitors' fields.
DURHAM—*Continued.*		[100]	[100]				
MILLBROOK AGR. SOCIETY.							
Judges—Wilson Black, Stroud, and T. G. Raynor, Ottawa							
W. W. Kennedy, Millbrook, R.R. 2	Banner	91	86	54.6	34.4	89	15
H. Hubbard, do R.R. 3	do	87½	88½	52.5	35.4	87.9	15
D. A. Henry, do R.R. 2	do	89	82½	53.4	33	86.4	15
H. Bland, Ida, R.R. 2	do	88	71½	52.8	28.6	81.4	1
T. A. Kelly, Fraserville	do	82	80	49.2	32	81.2	13
W. R. N. Sharpe, Ida, R.R. 1	do	80	79½	48	31.8	79.8	15
L. H. Winslow, do	do	74	83½	44.4	33.4	77.8	1, 15
R. Boner, Millbrook, R.R. 1	do	71	83	42.6	33.2	75.8	1, 15
W. T. Donaldson, do	do	86½	54½	51.9	21.8	73.7	15, 10
WEST DURHAM AGR. SOCIETY.							
Judges—Milton W. Young, Woodrous, and T. G. Raynor, Ottawa.							
L. T. Pascoe, Hampton, R.R.	Banner	93½	77	56.1	30.8	86.9	
J. Baker, do	do	92	78	55.2	31.2	86.4	13
A. W. Annis, Tyrone	do	88	83	52.8	33.2	86	2
Jas. Leask & Son, Taunton	do	87	84	52.2	33.6	85.8	15, 13
A. L. Pascoe & Son, Hampton, R.R. 1	do	91½	76	54.9	30.4	85.3	
J. R. Bragg, Bowmanville, R.R. 4	do	87½	81½	52.5	32.6	85.1	15
S. E. Werry, Hampton R.R. 1	do	86½	79	51.9	31.6	83.5	11
D. J. Gibson, Bowmanville, R.R. 4	do	80½	76½	48.3	30.6	78.9	2
R. E. Osborne, do R.R.2	do	82½	63	49.5	25.2	74.7	2
J. R. Kivell, Hampton	do	75	63	45	25.2	70.2	1, 2
ELGIN.							
ALDBORO AGR. SOCIETY.							
Judges—R. H. Harding, Thorndale, and W. J. W. Lennox, Toronto.							
D. Purcell & Son, Wardsville	Banner	86	86½	51.6	34.6	86.2	
J. A. McGregor, do	do	85	87	51	34.8	85.8	10,14,15
A. E. Johnston, do	do	81	88½	48.6	35.4	84	
Jno .J. Johnston, do	do	83½	83½	50.1	33.4	83.5	
J. A. King, do	do	87	76½	52.2	30.6	82.8	
A. Linden, do	do	79½	87½	47.7	35	82.7	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	Weeds in competitors' fields.
ELGIN—*Continued.*		[100]	[100]				
ALDBORO AGR. SOC.—*Con.*							
Sylvester King, Wardsville	Banner	78¼	87	46.9	34.8	81.7	
Wm. W. Campbell & Son, Wardsville	do	79	85½	47.4	34.2	81.6	
A. Colquhoun, do	do	76	85	45.6	34	79.6	15, 14
Wm. Leverton, do	do	74½	86½	44.7	34.6	79.3	10, 14
Arthur Scott, do	do	80	77½	48	31	79	
Henry Johnston, Bothwell, R.R. 3	do	76½	82½	45.9	33	78.9	
A. Purcell, Rodney	do	73½	81	44.1	32.4	76.5	
R. A. Kerr, do	do	77	70	46.2	28	74.2	
GREY.							
DESBORO AGR. SOCIETY.							
Judges—Alex. McKague, Teeswater, R.R. 1, and W. J. W. Lennox, Toronto.							
L. M. Mannerow, Desboro, R.R. 1	Banner	88½	87	53.1	34.8	87.9	
John Halliday, Chatsworth, R.R. 3	do	86½	78	51.9	31.2	83.1	15
W. Beattie, do	do	84	79	50.4	31.6	82	15, 14
Ed. Carson, do	do	83	80	49.8	32	81.8	14
A. Dow, Dobbington R.R.1	do	82	74½	49.2	29.8	79	15, 14
W. A. McGregor, Desboro	do	81	69½	48.6	27.8	76.4	
W. J. Bryans, Chatsworth, R.R. 3	do	79½	63½	47.7	25.4	73.1	10, 15
EGREMONT AGR. SOCIETY.							
Judges—Robt. Medd, Auburn and W. J. W. Lennox, Toronto.							
Jos. A. Dixon, Varney, R.R. 1	Banner	91	90	54.6	36	90.6	15
Jas. A. Smith, Holstein, R.R. 1	do	93	82	55.8	32.8	88.6	15
H. A. Cowan, Mt.Forest, R.R.3	do	92	79	55.2	31.6	86.8	
Robt. Aitken, Holstein, R.R. 2	do	89	81	53.4	32.4	85.8	15
W. W. Ramage, Varney, R.R.1	do	84½	84½	50.7	33.8	84.5	
Thos. Dingwall, Holstein	do	84	81½	50.4	32.6	83	15
Robt. Sim., Mt. Forest, R.R. 3	do	85½	71	51.3	28.4	79.7	14
W. H. Hunter, Varney, R.R.8		84	71	50.4	28.4	78.8	11
A. E. Caulfield, Mt. Forest, R.R. 2	do	87	64½	52.2	25.8	78	14
Jos. Dowling, do R.R.3	do	79	76	47.4	30.4	77.8	10, 15
A. R. Henderson, Holstein, R.R. 2	do	86	63	51.6	25.2	76.8	14

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	†Weeds in competitors' fields.
GREY—*Continued.*							
KILSYTH AGR. SOCIETY.							
Judges—R. H. Harding, Thornand W. J. W. Lennox, Toronto.							
E. H. Coulter, Owen Sound, R.R. 3	Banner	85½	87	51.3	34.8	86.1	
A. Fleming, Tara, R.R. 5	do	86	86	51.6	34.4	86	
W. H. Marshall, Owen Sound, R.R. 5	do	83½	81	50.1	32.4	82.5	
A. S. Donald, Tara, R.R. 5	do	85	78	51	31.2	82.2	
J. W. Sherman, do	do	83¾	79½	50.2	31.8	82.05	
Geo. Anderson, Owen Sound, R.R. 3	do	80½	83	48.3	33.2	81.5	10
J. A. Forgrave, do R.R. 5	do	80	79½	48	31.8	79.8	
B. V. Barber, do	do	80	77	48	30.8	78.8	1
H. Breen, Tara, R.R. 5	do	80	77	48	30.8	78.8	
D. T. Waddell, Kilsyth	do	84	70	50.4	28	78.4	
Geo. Wylie, do	do	78	72½	46.8	29	75.8	15, 14
I. McInnis Owen Sound, RR..4	do	83	60	49.8	24	73.8	
HASTINGS.							
STIRLING AGR. SOCIETY.							
Judges—W. Hickson, Bobcaygeon, and T. G. Raynor, Ottawa							
Ed Morrow, Stirling	Banner	90½	89	54.3	35.6	89.9	15
C. M. Sine, do	do	89¾	85½	53.9	34.2	88.1	15, 14
M. Shea, do	do	88	85½	52.8	34.2	87	10, 15
T. J. Thompson, do R.R. 1	do	89½	82	53.7	32.8	86.5	15, 10
Geo. F. Cooke, do R.R. 2	do	86¼	85½	51.7	34.2	85.9	15, 10
P. McAvoy, Ivanhoe, R.R. 2	do	87½	83½	52.5	33.4	85.9	15, 10
Jas. A. Bailey, Stirling	do	89	78	53.4	31.2	84.6	15,14,10
Geo. F. Griffin, do	do	86½	79	51.9	31.6	83.5	
C. W. Thompson, do	do	86	72	51.6	28.8	80.4	15,14,10
HURON.							
GODERICH IND. AGR. SOCIETY.							
Judges—Robt. Berry, St.Mary's, and W. J. W. Lennox, Toronto.							
Bell Bros., Goderich, R.R. 2	Banner	90	86	54	34.4	88.4	
R. J. Glen, do R.R. 6	do	88	81½	52.8	32.6	85.4	14
J. G. Schanz, Clinton, R.R. 2	do	86½	80	51.9	32	83.9	
Jno. Kerighan, Goderich, R.R.4	do	87	76½	52.2	30.6	82.8	1
I. Hetherington, Sheppardton, R.R. 1	do	89	72	53.4	28.8	82.2	15
R. Andrews, Goderich, R.R. 2	do	82	80	49.2	32	81.2	
T. M. Snowdon, Zurich, R.R. 2	do	87½	70	52.5	28	80.5	14, 15
J. W. Hunter, Goderich, R.R. 3	do	80½	80	48.3	32	80.3	15, 14
F. Young, do R.R. 5	do	78	82	46.8	32.8	79.6	15, 1
Jno. Sowerby, do R.R. 2	do	75	69½	45	27.8	72.8	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	†Weeds in competitors' fields.
HURON—*Continued.*		[100]	[100]				
TURNBERRY AGR. SOCIETY.							
Judges—Andrew Schmidt, Mildmay, and W. J. W. Lennox, Toronto.							
Thos. Taylor, Wingham, R.R. 5	Banner	86½	91	51.9	36.4	88.3	15
R. Wilton, do R.R. 1	do	88	88	52.8	35.2	88	
P. MacEwan, Bluevale, R.R. 1	do	87	81½	52.2	32.6	84.8	1, 15
W. Webster, Lucknow, R.R. 2	do	86	79½	51.6	31.8	83.4	15
I. J. Wright, Wingham,	do	78	88½	46.8	35.4	82.2	15, 1, 2
J. C. Mitchell do R.R. 1	do	80½	83	48.3	33.2	81.5	1
W. R. Cruikshank, do do	do	79½	83	47.7	33.2	80.9	1, 14
H. Gilmour, do do	do	81	77	48.6	30.8	79.4	1
H. T. Perdue, do R.R. 5	do	79½	76	47.7	30.4	78.1	15, 14
D. S McNaughton, Bluevale, R.R. 1	do	79	71½	47.4	28.6	76	15, 1, 14
F. Henry, Lucknow, R.R. 5	do	84½	54½	50.7	21.8	72.5	1
KENT.							
HARWICH AGR SOCIETY.							
Judges—B. R. Cohoe, Woodslee, and W. J. W. Lennox, Toronto.							
Wm. Knight, Blenheim	Banner	91	82	54.6	32.8	87.4	15, 14
Ian Maynard, Chatham, R.R.3	do	89	82½	53.4	33	86.4	15
E. Crummer, Blenheim, R.R. 2	do	88	83	52.8	33.2	86	15
D. M. Campbell, do R.R. 4	do	87½	77	52.5	30.8	83.3	14
H. B. Muckle, do do	do	90	61½	54	24.6	78.6	15
A. S. Huffman, Mull, R.R. 1	do	88½	59	53.1	23.6	76.7	
L. Campbell, Blenheim, R.R. 4	do	87	50	52.2	20	72.2	
Wm. Snow do	do	84	51½	50.4	20.6	71	15,14,12
J. Campbell, Blenheim, R.R. 4	do	85½	47	51.3	18.8	70.1	15, 14
Thos. Pegg, do R.R. 3	do	85	47½	51	19	70	15
WALLACEBURG AGR. SOCIETY.							
Judges—B. R. Cohoe, Woodslee, and W. J. Lennox, Toronto. W.							
Chester Crowe, Wallaceburg, R.R. 2	Banner	90	87	54	34.8	88.8	4
Orie Crowe, do R.R. 5	do	91	84½	54.6	33.8	88.4	15
Jos. Coveny, Electric, R.R. 1	do	89½	86½	53.7	34.6	88.3	14
Dan. Coveny, do	do	86½	90	51.9	36	87.9	

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	‡Weeds in competitors' fields.
KENT—*Continued.*		[100]	[100]				
WALLACEBURG AGR. SOC.—*Continued.*							
W. McCarroll, Wallaceburg, R.R: 2	Banner	87½	86	52.5	34.4	86.9	15, 14
D. L. McCreary, do R.R. 5	do	88½	81½	53.1	32.6	85.7	15, 9
Geo. W. Arnold, do R.R. 3	do	87	81½	52.2	32.6	84.8	15
Geo. L. Mickle, do R.R. 2	do	85½	82	51.3	32.8	84.1	
John Coveny, Electric	do	83½	84	50.1	33.6	83.7	15
W. C. Gordon, do	do	80	79½	48	31.8	79.8	15, 14
Jas. M. Langstaff, Tupperville, R.R. 3	do	83	72	49.8	28.8	78.6	15, 14
Alex. McCreary, Wallaceburg, R.R. 2	do	86	62	51.6	24.8	76.4	9, 14
LAMBTON.							
PETROLIA AND INNISKILLEN AGR. SOCIETY.							
Judges—Jas. Pullin, Woodstock, R.R. 1, and W. J. W. Lennox, Toronto.							
Geo. Simpson, Oil City	Banner	88½	83	53.1	33.2	86.3	6
M. Wilkins, Petrolia, R.R. 1	do	82	89½	49.2	35.8	85	15
Thos. Simpson, Glenrae	do	88	70½	52.8	28.2	81	
W. A. Black, Petrolia	do	79½	79	47.7	31.6	79.3	15
D. Wright, do	do	85	66	51	26.4	77.4	
Dan. Dewar, do	do	89½	59	53.7	23.6	77.3	
Jas. Ginse, Oil Springs, R.R. 3	do	81	69	48.6	27.6	76.2	15
E. Douglas, Petrolia, R.R. 4	do	87½	53	52.5	21.2	73.7	
NIPISSING.							
VERNER AGR. SOCIETY.							
Judges—Peter Wilson, Cobden, and T. G. Raynor, Ottawa.							
Andre Beaudry, Verner	O. A. C. 72	93½	91½	56.1	36.6	92.7	
H. Filiatrault, do	do	95	85	57	34	91	
O. Poitras, do	do	93	78½	55.8	31.4	87.2	
Ed. Roberge, do	do	88	81½	52.8	32.6	85.4	
F. Beaudry, do R.R. 1	do	91	75½	54.6	30.2	84.8	
H. Demers, do do	do	89½	74½	53.7	29.8	83.5	
D. Boufford, do do	do	90	73½	54	29.4	83.4	
Geo. Limoges, do	do	86	65½	51.6	26.2	77.8	
A. Sylvester, do	do	83	63	49.8	25.2	75	13

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	‡Weeds in competitors' fields
NORFOLK.		[100]	[100]				
NORTH WALSINGHAM AGR. SOCIETY.							
Judges—M.W. Sexsmith, Ridgeway, and W. J. W. Lennox, Toronto.							
Wm. S. Collings, Langton, R.R. 1	Reg. Banner	94¾	81	56.8	32.4	89.2	
Wm. H. Hunter, do	do	93	75½	55.8	30.2	86	
Wm. Wittet, Courtland, R.R. 1	do	90	77½	54	31	85	14
R. G. McDowell, Port Rowan, R.R. 1	do	91	75	54.6	30	84.6	
Wm. S. McDowell, do	do	90½	75½	54.3	30.2	84.5	
C. J. Swain, Langton	do	91¾	69	55.0	27.6	82.6	
Roy Masecar, Wyecombe	do	88½	72	53.1	28.8	81.9	14, 15
E.E. Murphy, Silver Hill, R.R.1	do	83½	69½	50.1	27.8	77.9	
Chas. Hunter, Wyecombe	do	85½	62	51.3	24.8	76.1	14, 15
PETERBOROUGH.							
EAST PETERBOROUGH AGR. SOCIETY.							
Judges—W. Monaghan, Wellington, R.R. 1, and T. G. Raynor Ottawa.							
J. A. Knox, Indian River, R.R. 2	O. A. C. 72	93	89½	55.8	35.8	91.6	
J. Sargent & Son, Westwood	do	93½	87½	56.1	35	91.1	15
Jno. English, Norwood	do	86	89	51.6	35.6	87.2	15
D. Barrie do	do	87	87	52.2	34.8	87	15
Thos. Dunham, Campbellford	do	90	80½	54	32.2	86.2	
G. A. Brethen, Norwood, R.R. 3	do	92	75	55.2	30	85.2	15
F. Patterson do	do	91	73	54.6	29.2	83.8	
W. G. Barrie, do	do	84¾	82	50.8	32.8	83.6	15
G. J. Edwards, do	do	88½	76	53.1	30.4	83.5	15
F. J. Greenbank, do	do	89	55	53.4	22	75.4	15
RAINY RIVER.							
RAINY RIVER VALLEY AGR. SOCIETY.							
Judges—J. L. Locking, Emo, and T. G. Raynor, Ottawa.							
Chas. Fisher, Emo	Am. Banner	92	85	55.2	34	89.2	2
Jas. Hastie, Fort Frances	do	88½	78½	53.1	31.4	84.5	2
A. G. Crawford, Emo	do	84	84	50.4	33.6	84	15
Chas. H. McCool, Devlin	do	83	81½	49.8	32.6	82.4	2, 15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	†Weeds in competitors' fields.
RAINY RIVER—*Continued.*		[100]	[100]				
RAINY RIVER VALLEY AGR. SOC.—*Continued.*							
Wm. Jewell, Aylesworth	Am. Banner	79	84½	47.4	33.8	81.2	2, 15
F. Everett, Emo	do	82	76½	49.2	30.6	79.8	2
A. Melin, do	do	87	68½	52.2	27.4	79.6	15
F. W. Tummey, Emo	do	77	74	46.2	29.6	75.8	2
Geo. Langtry, do	do	74	67	44.4	26.8	71.2	15
A. J. Leveridge, do	do	79½	58½	47.7	23.4	71.1	2, 15
Jno. J. Cooper, do	do	76	62	45.6	24.8	70.4	2, 15
SIMCOE.							
BARRIE AGR. SOCIETY.							
Judges—Jas. McLean, Richmond Hill, and W. J. W. Lennox, Toronto.							
J. H. Luck, Barrie, R.R. 1	Banner	92	87½	55.2	35	90.2	
Roy Hickling, do R.R. 2	do	90	87	54	34.8	88.8	2
Chas. Hodges, Edgar	do	85	88	51	35.2	86.2	1, 15
Geo. B. Coutts, Midhurst	do	88	79	52.8	31.6	84.4	15
R. A. Sutherland, Stroud	do	91½	70½	54.9	28.2	83.1	14
B. B. Warnica, Allandale	do	93½	64½	56.1	25.8	81.9	15
Fred Carson, Barrie, R.R. 2	do	91	65½	54.6	26.2	80.8	2
A. A. Garvin, Midhurst	do	80	81½	48	32.6	80.6	1, 15
R. D. Coutts, do	do	85½	73	51.3	29.2	80.5	15
J. W. Black, Stroud	do	86½	67½	51.9	27	78.9	2, 15, 13, 10
T. G. Sythes, Thornton	do	87½	63½	52.5	25.4	77.9	15
G. McDonald, Barrie, R.R. 2	do	79½	72½	47.7	29	76.7	
W. H. Partridge, Barrie, R.R. 1	do	77	60½	46.2	24.2	70.4	1, 2
VICTORIA.							
FENELON AGR. SOCIETY.							
Judges—A. Foster, Markham, and T. G. Raynor, Ottawa.							
Jno. Knox, Fenelon Falls	O. A. C. 72	94¼	89½	56.5	35.8	92.3	
Wm. J. Gillies, do R.R. 3	do	85	95	51	38	89	15
Chas. Walker, do	do	86½	88½	51.9	35.4	87.3	15
G. Kelly, do	do	88	85	52.8	34	86.8	
Wm. Hetherington, do	do	87	85½	52.2	34.2	86.4	15
Jno. Graham, do	do	92	75½	55.2	30.2	85.4	15
Jno. Lean, Cameron, R.R. 2	do	83	79½	49.8	31.8	81.6	2, 15
Jno. Webster, Woodville	do	80½	64	48.3	25.6	73.9	15, 2

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	‡Weeds in competitors' fields.
VICTORIA—*Continued.*		[100]	[100]				
VERNHAM AGR. SOCIETY.							
Judges—R. H. Crosby, Markham, and T. G. Raynor, Ottawa.							
G. Kennedy, Bobcaygeon	Reg. Banner	91½	80½	54.9	32.2	87.1	
H. R. Seymour, do	do	87½	85	52.5	34	86.5	15, 13
Geo. W. Bick, do	do	89	79	53.4	31.6	85	
Robt. Watts. do	do	90	75	54	30	84	14
R. Kimble, do	do	90½	72½	54.3	29	83.3	15
R. E. Thurston, do	do	86	78½	51.6	31.4	83	
J. N. Taylor, do	do	88	69½	52.8	27.8	80.6	14, 15
C. Taylor, do	do	76½	82	45.9	32.8	78.7	2, 15
H. McGee, do	do	85½	67½	51.3	27	78.3	15
Thos. Cosh, do	do	79	67	47.4	26.8	74.2	15, 13
Jos. Anderson, do	do	78½	61½	47.1	24.6	71.7	1, 15
Arch, Campbell, do	do	79½	56½	47.7	22.6	70.3	15
WATERLOO.							
SOUTH WATERLOO AGR. SOCIETY.							
Judge—Jas. Boyd, Markham, and W. J. W. Lennox, Toronto.							
Geo. R. Barrie & Son, Galt, R.R. 7	Banner	88½	84	53.1	33.6	86.7	15
Geo. P. Moore, do	do	87	82	52.2	32.8	85	15
Wm Brown, do	do	79½	86½	47.7	34.6	82.3	10,14,15
J. B. Cowan, do	do	83½	80	50.1	32	82.1	14, 15
E. G. Hallman, Ayr R.R. 1	do	86	75	51.6	30	81.6	14, 15
L Dedman, New Dundee, R.R. 1	do	80½	80	48.3	32	80.3	15
Jno. Brown & Son, Galt	do	81½	78¼	48.9	31.3	80.2	
E J. Kemkes Branchton, R.R. 1	do	84	74	50.4	29.6	80	15
R. E. Cowan, Galt, R.R. 3	do	78½	82	47.1	32.8	79.9	15, 1, 14
C. Hilborn, New Dundee, R.R. 1	do	77½	81½	46.5	32.6	79.1	14, 15, 2
Wm. Copeland, Ayr, R.R. 2	do	80	75	48	30	78	15
M. Scott, Galt, R.R. 3	do	83	66½	49.8	26.6	76.4	14,15,12
Wm. C. Shaw, Hespeler, R.R. 2	do	78	74	46.8	29.6	76.4	10, 15
A. G. Taylor, Galt, R.R. 7	do	82	67	49.2	26.8	76	15
R. G. Ford, do	do	79	64½	47.4	25.8	73.2	14, 15
Wm. King, Ayr, R.R. 1	do	77	60	46.2	24	70.2	15, 14, 2

NOTE.—The figure in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Score.	40% of Bin Score.	Totals of Scores.	‡Weeds in competitors' fields.
WELLAND.		[100]	[100]				
BERTIE AGR. SOCIETY.							
Judges—D. I. McClure, Toronto, and W. J. W. Lennox, Toronto.							
M. W. Sexsmith, Ridgeway	O. A. C. 72	89½	82½	53.7	33	86.7	15
Geo. W. Miller, Stevensville, R.R. 2	do	85½	82	51.3	32.8	84.1	15, 14
Wm. J. Wale, Bridgeburg	do	78½	85½	47.1	34.2	81.3	15, 14
Jno. McGaw, Fort Erie	do	82	80	49.2	32	81.2	15, 10
Wm. Waehl, Bridgeburg, R.R. 1	do	81	80	48.6	32	80.6	15, 14
E. O. Disher, Ridgeway, R.R. 2	do	79½	73½	47.7	29.4	77.1	15
J. R. Phillips, Fort Erie, R.R. 1	do	80	72¼	48	28.9	76.9	15
WELLINGTON.							
ARTHUR AGR. SOCIETY.							
Judges—Jno. McDiarmid, Lucknow, and W. J. W. Lennox, Toronto.							
Jno. Bodendistle, Kenilworth	Banner	85½	77½	51.3	31	82.3	
Jno. Scarrow, Belwood	do	82½	77	49.5	30.8	80.3	
W. F. Carlaw, do	do	84	74	50.4	29.6	80	
G. W. Dodge, Kenilworth	do	80	78	48	31.2	79.2	
Alex. Cook, do	do	81½	71T	48.9	28.4	77.3	
Jas. Bodendistle, do	do	82	64¼	49.2	25.7	74.9	
H. A. Cormack, Arthur, R.R. 3	do	71	77	42.6	30.8	73.4	
Wm. McCrone, do	do	84½	52	50.7	20.8	71.5	
PUSLINCH AGR. SOCIETY.							
Judges—D. English, Burketon, and W. J. W. Lennox, Toronto.							
J. & G. W. Barclay, Guelph, R.R. 6	Reg. Banner	96	92	57.6	36.8	94.4	15
J. A. Cockburn & Son, Puslinch, R.R. 1	do	95	89½	57	35.8	92.8	15
D. A. McLean, do	do	92½	87½	55.5	35	90.5	15
O. Rappoth, Guelph, R.R. 3	do	89	89½	53.4	35.8	89.2	
Alex. McLean & Son, Puslinch, R.R. 1	do	90½	85	54.3	34	88.3	
Wm. Winer & Son, Guelph, R R. 3	do	85½	88¼	51.3	35.3	86.6	
P. J. McLean & Son, Puslinch, R.R. 1	do	90	78¾	54	31.5	85.5	
Jas. Clark & Sons, do	do	89½	78¼	53.7	31.3	85	14
Robt. McCartney & Sons, Guelph, R.R. 3	do	85	83¾	51	33.5	84.5	15

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

OATS.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.	†Weeds in competitors' fields.
WELLINGTON—*Continued.*		[100]	[100]				
ROCKWOOD AGR. SOCIETY.							
Judges—Jas. McLean, Richmond Hill, and W. J. W. Lennox, Toronto.							
Arch. McNabb, Rockwood, R.R. 4	Banner	91½	97½	54.9	39	93.9	
J. Gahan, do R.R. 5	do	93	91½	55.8	36.6	92.4	
W. G. Chapman, do R.R. 3	do	87½	92½	52.5	37	89.5	
G. L. Kean, Guelph, R.R. 2	do	88	91	52.8	36.4	89.2	15
H. E. Alton, Rockwood, R.R. 1	do	88½	88½	53.1	35.4	88.5	
B. Tolton, 159 Perth St., Guelph	do	90½	83	54.3	33.2	87.5	
Jno. I. Cummins, Rockwood	do	86	89½	51.6	35.8	87.4	15
C. H. Harris, do	do	87	84	52.2	33.6	85.8	15
M. E. Burns, do	do	77½	89	46.5	35.6	82.1	15

SPRING WHEAT.

RENFREW.							
RENFREW AGR. SOCIETY.							
Judges—S. G. Gourlay, Ottawa, and T. G. Raynor, Ottawa.							
W. Galbraith, Renfrew	Marquis	88½	92	53.1	36.8	89.9	
G. McIntyre do	do	87	83½	52.2	33.4	85.6	10
F. W. Frood, do Box 208	do	85½	83	51.3	33.2	84.5	15
J. L. Miller, Glasgow, R.R.	do	76	91½	45.6	36.6	82.2	1
R. Leitch, Renfrew	do	79	78	47.4	31.2	78.6	
P. Hamilton, Renfrew	do	69	88½	41.4	35.4	76.8	4, 2

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

POTATOES.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of scores.
		]100]	[100]			
ALGOMA.						
CENTRAL ALGOMA AGR. SOCIETY.						
Judges—F. W. Presant, Ottawa, and A. T. Davidson, Ottawa.						
Geo. Farmer, S. S. Marie, R.R. 2....	Green Mountain....	82	92	49.2	36.8	86
J. K. Toles, do R.R. 1....	do ...	79½	89½	47.7	35.8	83.5
Gus Holmberg, do do	do ...	80	84½	48	33.8	81.8
Ed. Allen do do	do ...	86	74	51.6	29.6	81.2
H. Knight, Jr., do do	do ...	84	74½	50.4	29.8	80.2
W. J. Conway, do do	do ...	78	82¾	46.8	33.1	79.9
Wm. Fisher, do do	do ...	85½	70¼	51.3	28.1	79.4
T. W. Farmer, do R.R. 2....	do ...	82	73¾	49.2	29.5	78.7
P. Lethbridge, do do	do ...	76½	73¾	45.9	29.5	75.4
Geo. Nixon, do R.R. 1....	do ...	76½	67¼	45.9	26.9	72.8
W. G Hill, do do	do ...	85	48½	51	19.4	70.4
NORFOLK.						
NORFOLK AGR. SOCIETY.						
Judges—H H. Scott, Ottawa, and J. M. Dalglish, Ottawa.						
J. W. Ackerman, Delhi.....	Irish Cobbler.....	89	98¾	53.4	39.5	92.9
S. N. Culver, Simcoe, R.R. 4.....	do	83	97	49.8	38.8	88.6
H. Turvey, Vittoria.....	do	77½	95	46.5	38	84.5
Thos. Leedham, St. Williams, R.R. 1.	do	77	94	46.2	37.6	83.8
C. Yeager, Lynnville, R.R. 1.....	do	85	72¼	51	28.9	79.9
W. C. Everett, Simcoe.....	do	78	82	46.8	32.8	79.6
P. Yeager, Lynnville, R.R. 1.....	do	83½	67¾	50.1	27.1	77.2
T. W. Bancroft, Simcoe, R.R. 4.....	do	65	89	39	35.6	74.6
Neff Bros., Simcoe.....	do	73	74¾	43.8	29.9	73.7
N. S. Palmerston, Charlotteville, R.R. 2	do	63	89	37.8	35.6	73.4
WENTWORTH.						
WATERDOWN AGR. SOCIETY.						
Judges—J. M. Dalglish, Ottawa, and A. Fulton, Ottawa.						
David Thompson, Waterdown.....	Green Mountain....	80.5	.....	.....	.....	80.5
Wm. Attridge., do	do ...	80	.....	.....	.....	80.5
Chas. Goodbrand, Hamilton, R.R. 2 .	do ...	70	.....	.....	.....	79
Wm. Thompson, Waterdown.....	do ...	76.3	.....	.....	.....	76.3
W. H. Drummond, do	do ...	75.6	.....	.....	.....	75.6
Geo. Hood, do	do ...	73.2	.....	.....	.....	73.2
R. F. Allen, do	do ...	73.1	.....	.....	.....	73.1
Horning Bros., do	do ...	71	.....	.....	.....	71
Wm. Buttenham, Flamboro.....	do ...	71	.....	.....	.....	71
Jno. Morrison. Waterdown.....	do ...	70.8	.....	.....	.....	70.8

NOTE.—The figures in brackets at the top are maximum possible scores.

RESULTS IN COMBINED STANDING FIELD CROP AND THRESHED GRAIN COMPETITIONS—Con.

CORN.

Competitors in Order of Merit.	Name of variety.	Field Scores.	Bin Scores.	60% of Field Scores.	40% of Bin Scores.	Totals of Scores.
KENT.		[100]	[100]			
ORFORD AGR. SOCIETY.						
Judges—E. J. Mullins, Woodslee, and W. J. W. Lennox, Toronto.						
Geo. B. Newman, Muirkirk, R.R. 2..	Golden Glow.....	91	88	54.6	35.2	89.8
R. A. Newman, do ..	do	90½	87½	54.3	35	89.3
W. W. Scott & Sons, Highgate, R.R. 2	do	88½	88	53.1	35.2	88.3
E. Gosnell, do ..	do	90	84½	54	33.8	87.8
Jno. Snoblen, do ..	do	84	92	50.4	36.8	87.2
Wm. Blue, Muirkirk, R.R. 1.....	do	87½	86	52.5	34.4	86.9
F. W. Scott, Highgate, R.R. 1.....	do	87	83½	52.2	33.4	85.6
P. Clark & Son, do R.R. 2.....	do	88	74½	52.8	29.8	82.6
J. F. Stone, do do	do	85	76½	51	30.6	81.6
WEST KENT AGR. SOCIETY.						
Judges—Jas. Pullin, Woodstock, R.R. 1, and W. J. W. Lennox, Toronto.						
R. J. Johnston, Chatham.....	Salzer's, N. Dakota.	94½	93½	56.7	37.4	94.1
A. S Maynard, do R.R. 3.....	do do ..	93½	92	56.1	36.8	92.9
D. Houston, do R.R. 1.....	do do ..	95	89	57	35.6	92.6
A. S. Campbell, Blenheim, R.R. 2...	do do ..	93	91	55.8	36.4	92.2
S. Campbell do ...	do do ..	92½	91½	55.5	36.6	92.1
Wm. W. Weaver, Turnerville, R.R. 1	do do ..	89½	93½	53.7	37.4	91.1
A. McDonald & Son, Chatham, R.R.3	do do ..	87½	89	52.5	35.6	88.1
W. A. Stewart & Sons, do	do do ..	89	77	53.4	30.8	84.2
N. Truedell, do	do do ..	86½	78½	51.9	31.4	83.3
Wm. McMillan, 699 Queen St., Chatham.	do do..	84	75½	50.4	30.2	80.6

NOTE.—The figures in brackets at the top are maximum possible scores.

STANDING FIELD CROP COMPETITIONS

ONTARIO DEPARTMENT OF AGRICULTURE

1. SCORING FOR YIELD

The following are the standards of yields per acre adopted at Guelph and Ottawa for the different crops to be judged in Ontario:

Crops	Bushels per acre.	Number of bushels below standard for each point dropped.
Oats	80	10
Barley	60	10
Corn	80	10
Winter Wheat	40	5
Spring Wheat	35	5
Field Peas	30	5
Beans	40	5
Potatoes	500	25
Mangels	1,200	75
Turnips	1,200	75

2. STANDARD VARIETIES OF GRAIN AND POTATOES.

In order to encourage selection of the best varieties of grain and potatoes, it has been decided that the Field Crop Competitors should select from the following standard varieties:

Fall Wheat—Dawson's Golden Chaff (White), Imperial Amber (Red).

Spring Wheat—Marquis, Red or White Fife, Wild Goose.

Oats—O.A.C. No. 72, Banner, Abundance, Granary Filler, Mammoth Cluster, Yellow Russian.

Barley—O.A.C. No. 21, Mandscheuri.

Peas—Golden Vine, Canadian Beauty (White Marrowfat), Arthur.

Beans—Pea.

Corn—(Dent)—Wisconsin No. 7, White Cap Yellow Dent, Bailey, Golden Glow.

Corn (Flint)—North Dakota, Longfellow, Quebec Yellow.

Potatoes—Green Mountain (Delaware), Carman No. 1, Davies Warrior, Dooley, Irish Cobbler (Extra Early Eureka), Early Ohio, Gold Coin.

This does not prohibit the use of any other variety than those named, but, when the judge is scoring a field, if any other variety than the above-named standard ones is grown, two points will be deducted from the total score.

3. WEEDS IN CEREALS.

Class 1.

1. Wild Oats.
2. Perennial Sow Thistle.
3. Purple Cockle.
4. Wild Tares.
5. Wild Mustard.
6. Hare's Ear Mustard.
7. Ball Mustard.
8. Penny Cress.
9. False Flax.
10. Twitch Grass.
11. Bladder Campion.

All weeds in Class 1 are to be scored quite heavily, and Wild Oats and Perennial Sow Thistle the heaviest of all.

If Wild Oats or Perennial Sow Thistle are found going to seed in the crop the following points should be deducted from the total score: One plant, 3 points; Two plants, 5½ points; Three plants, 7½ points; Four plants, 9 points; and one point for each of the next Six plants, making 15 points cut if as many as Ten plants can be found.

Class 2.

12. Field Bindweed
13. White Cockle.
14. Curled Dock.
15. Canada Thistle.
16. Chess.
17. Hemp Nettle.

The weeds in Class 2, are to be scored somewhat lighter than those of Class 1.

Class 3.—All other weeds scored somewhat less than those of Class 2.

Note.—Great care should be taken to name on the Score Cards all the weeds of Class 1 and Class 2 which are found in each field. This is very important.

4. POTATOES, MANGELS, TURNIPS AND SUGAR BEETS.

Method of Determining Yield.

Each judge is to take with him an outfit for making the determination, including scales or steelyards. If necessary, a set should be purchased for about $1.00, a receipt obtained for the same and the amount included with the travelling expenses.

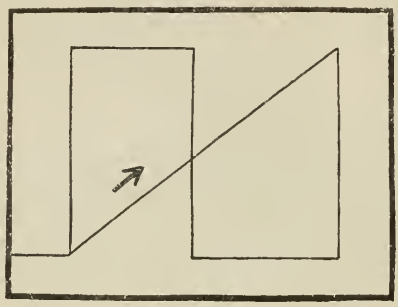
Each judge is to dig and weigh the potatoes in each of two places in every field examined. The following schedule will assist in making each of the determinations:

Inches wide.	Feet long.
26	18
27	16½
30	15
33	13½
36	12
39	11¼
42	10½
45	9¾
48	9

Each lot weighed represents yield of 4 square yards. This divided by 4 is the yield of 1 square yard, which multiplied by 4,840 gives the yield in pounds per acre, and when divided by 60 gives the estimated number of bushels per acre. The two lots worked out in this way, when added and divided by 2, give the estimated yield per acre from which the score can be determined.

5. EVERY JUDGE MUST WALK THROUGH EACH FIELD WHICH HE JUDGES.

The majority of judges favour the following route, supposing the field to be nearly square:



If the field is of a different shape the route should be changed accordingly, so as to ensure the whole field being thoroughly examined.

Ontario Department of Agriculture

FIFTY-THIRD ANNUAL REPORT

OF THE

Fruit Growers' Association

OF

ONTARIO

1921

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

TORONTO:
Printed by CLARKSON W. JAMES, Printer to the King's Most Excellent Majesty
1922

Printed by
THE RYERSON PRESS
TORONTO

To His Honour HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the Sixty-Second Report of the Fruit Growers' Association of Ontario for the year 1921.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

Toronto, 1922.

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OFFICERS FOR 1922

President.....W. J. Bragg, Bowmanville.
Vice-President.....Paul Fisher, Burlington.
Secretary-Treasurer.....P. W. Hodgetts, Parliament Buildings, Toronto.
Executive Committee.....Officers together with J. F. Elliott, Oxford Centre, and W. C. Nickerson, St. Catharines.

Directors.

Div. 1. B. H. Dangerfield, Kemptville.
2. Harold Jones, Prescott.
3. R. W. Ireland, Wellington.
4. A. A. Colvill, Newcastle.
5. W. J. Bragg, Bowmanville.
6. Paul A. Fisher, Burlington.
7. David Allan, Grimsby.
8. W. C. Nickerson, St. Catharines.
Div. 9. W. J. Schuyler, Simcoe.
10. John Clarke, Forest.
11. T. J. Salkeld, Lucknow.
12. J. F. Elliott, Oxford Centre.
13. W. L. Hamilton, Collingwood.
O.A.C., Prof. J. W. Crow, Guelph.
H.E.S., E. F. Palmer, Vineland Station.
C.E.F., W. T. Macoun, Ottawa.

Representatives to Fair Boards and Conventions.

Canadian National: W. F. W. Fisher, Burlington.
London: J. C. Harris, Ingersoll, and A. Sadler, Lambeth.
Ottawa: W. T. Macoun, Ottawa.

Committees.

Horticultural Publishing Company: P. W. Hodgetts, Toronto.

New Fruits: W. T. Macoun, Ottawa; Prof. J. W. Crow, Guelph; E. F. Palmer, Vineland Station.

Historical: A. W. Peart, Burlington; W. T. Macoun, Ottawa.

Transportation: W. H. Bunting, St. Catharines; D. Carpenter, Grimsby; Jas. E. Johnson, Simcoe; W. A. Shook, Clarkson; T. Foster, Burlington; M. C. Smith, Burlington.

TREASURER'S REPORT, 1921

Receipts.		Expenditures.	
Balance on hand, Dec. 31, 1920	$2,213 47	Annual Meeting	$ 179 14
Membership Fees	94 00	Committee Meetings	395 81
Interest	36 30	Printing	22 96
Imperial Fruit Show	373 15	Horticultural Pub. Co.	77 60
Grant	1,700 00	Imperial Fruit Show	1,374 92
		Miscellaneous	143 59
		Balance on Hand	2,222 90
	$4,416 92		$4,416 92

Details of Expenditures.

Annual Meeting.

Prince George Hotel, Rent Convention Room	$50 00	
F. C. Keeler, Delegate, expenses	14 50	
A. W. Peart, " "	3 40	
A. K. Sadler, " "	7 95	
Wm. England, " "	7 95	
David Allan, " "	12 55	
M. E. Coo, Reporting Convention	60 00	
N. R. Peet, Speaker	22 79	
		$179 14

Various Committees.

Niagara Peninsula F.G.A., Delegate expenses	$166 24	
H. Sirett, expenses	16 10	
B. F. Kerr, "	8 00	
David Allan, "	31 80	
W. A. Shook,	56 25	
A. A. Craise, "	6 95	
F. C. Keeler, "	14 35	
W. H. Bunting, "	70 82	
R. W. Ireland, "	25 30	
		$395 81

Printing.

College Press—Programmes		22 96

Periodicals.

Horticultural Publishing Co.—Membership subscriptions		77 60

Imperial Fruit Show:—

Fruit Bought—C. W. Challand	160 00	
H. C. Breckon	235 50	
Smith Bros.	30 00	
Harry Ryrie	154 50	
J. J. Gilbertson	84 00	
W. N. Langell	51 00	
Entry fees	49 50	
Express charges	610 42	
		1,374 92

Miscellaneous.

Exchange, interest, etc.	$1 59	
Auditor	10 00	
Insurance—Treasurer's Bond	10 00	
Special Grant—N. & D. Assn.	50 00	
Clerical Help	72 00	
		143 59
Total		$2,194 02

Fruit Growers' Association of Ontario

ANNUAL CONVENTION

The Ontario Fruit Growers' Convention was held in The Prince George Hotel, Toronto, February 7th and 8th, 1922. Mr. David Allan, President, in the Chair.

PRESIDENT'S ADDRESS.

David Allan, Grimsby.

Having had the honour of being elected by my Colleagues as President for a second term, I am therefore permitted to welcome you to this, the Sixty-second Annual Convention of the Ontario Fruit Growers' Association.

When we reflect on the honest endeavour of our Organization to advance the interests of fruit growing for a period of over sixty years, with a record of as many successful Conventions. we must admit that the Society has proven its worth to a very great extent.

To the founders of this Society—many of whom have passed to the Great Beyond—we owe a deep debt of gratitude, for having laid the foundation of our Association strong and deep, thus assuring its permanency for all these years, and the consequent benefits resulting therefrom.

Another year, with its responsibilities and opportunities, is past and gone. Coming as it did in the very centre of the re-adjustment period, we are of the opinion, that we should be very well satisfied with the results, considering the fact that 1921 will go down as an off year in fruit, especially in tree fruits.

I am firmly of the opinion that our industry is holding its own during this unsettled time, and its condition compares favorably with any of the great Canadian industries. It behooves us however, to stand fast and with optimism and industry, "Carry On," thus assuring the future greatness of our business.

We regret that owing to the new Arena not being completed in time, our Exhibition, in conjunction with other Societies, had to be cancelled. While we believe that we would have had a creditable show, we look forward with confidence to 1922, when, with a bigger crop to select from, we will be able to put up a show well worthy of the best traditions of the Province.

Your Directors, however, deemed it wise to make an Exhibit at the Imperial Fruit Show, held in the Crystal Palace, London, England, from the Twenty-eighth of October to the Fifth of November, 1921. While our growers generally readily responded to our request for exhibits, we think that special mention should be made of the twenty boxes of Kings from H. C. Brecken, Eronte; twenty boxes of Spies from Chas. Challand, Simcoe; and six boxes of Jonathans from W. M. Langell, Point Pelee. It is needless to say we were very gratified with the results, securing, as we did, four Firsts and five Seconds, together with the Silver Cup for highest aggregate of points in fourteen classes. But since this will be dealt with during our meeting, I leave the subject now by stating that we believe immense value, from an advertising standpoint, will be obtained as a result of this Exhibit.

In closing I desire to thank everyone for their co-operation and support.

THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

P. W. Hodgetts, Toronto.

The organization meeting of this Association was held in Hamilton in the Old Mechanics' Hall on January 19, 1859, at which there were eighteen present. The Association was continued for several years without incorporation. Its first President, Judge Campbell, of Niagara-on-the-Lake, died soon after the organization was effected, and as he was one of the leaders it gave the Association quite a blow. In 1861 they held their next meeting, and elected officers, and since that time the Association has not missed a year in its history when it has not held one or more meetings of different kinds.

The Association was incorporated in 1869 by a special act of the Legislature, as the Fruit Growers' Association of Ontario; previous to that time it was known as The Fruit Growers' Association of Upper Canada. The first report was published the same year, 1869, although previous to that time the Association had printed a list of fruits that were recommended for planting in the Province. The aims of the Association were, briefly, "the advancement of the science and art of fruit culture, by holding meetings for the exhibition of fruit and for discussion of all questions relative to fruit culture, by collecting, arranging and disseminating information, and by such other means as might from time to time seem advisable."

The methods employed by the officers from that time on up to the present in carrying out this programme, were many and varied, but generally successful. Among those that they carried out were the following: In the early days they held generally three meetings of the Association, Summer, Fall and Winter meetings, at different points throughout the Province, and in that way they covered in their history practically every town and city of any size in Ontario.

Secondly, they collected information on varieties of all fruits, and published lists from time to time, so that men who were starting in the industry would have information available to guide them in planting out their orchards. This was very useful information indeed. There were some rather strange things done in that connection. The Association had then, as it has now, a New Fruits Committee, to which new fruits were submitted for examination and approval, or otherwise. In going over the fruits I found the Ontario and McIntosh were both mentioned as comparatively new varieties, and the report of the Committee on the two varieties was somewhat to this effect: The Ontario was a fine, crisp apple of good color and size, and, living up to its reputation, would undoubtedly take the place of a good many of our varieties for our foreign markets. The McIntosh was said to be practically a perfect apple as far as color and size was concerned, but with a peculiar flavor, and the Committee thought in their opinion it should not be placed higher than third class. Now, you know the subsequent history of the two varieties. If we could have planted out the McIntosh in the place of the thousands of trees of Ontario that were planted at that time, we probably would have had quite a different story to tell as to winter injury, western competition etc. The McIntosh even yet, is not forming very much of the bulk of Ontario apples, despite the fact that it originated here, and has proven to be one of the most successful on the American Continent.

Third. Offering prizes for the best essays on Fruit Culture, to be printed in the annual reports.

Fourth. Offering prizes for new fruits. Prizes of $50, $40, and $30 were offered for a number of years.

Fifth. Sending out for trial all new and promising fruits including the following: Ontario, Wealthy, Pomme Grise, Grimes Golden, apples; Niagara and Salem grapes; Glass Seedling and McLaughlin plums; Clapps Favorite, Anjou and Clairgeau pears; Downing gooseberry.

Sixth. Starting the experimental orchards at the O.A.C., Guelph, 1880, and the variety test stations in 1894, continued for a long period at fourteen points in the Province, followed by the larger and permanent experiment station at Vineland in 1907. The original orchards at Guelph were planted by this Association, and a special Committee looked after them for a number of years. Following that, variety stations were started in 1894, and filled a very useful place, testing out for ten or fifteen years all of the varieties which are now being grown in the Province. This was followed at a later date by an agitation from this Association for the instituting of an Experimental Farm at Vineland, and this Association had the appointment of the Board.

Seventh. Continued movement for years for improved transportation for our fruit products. Later on in the history of the Association we studied more the commercial end of the industry, and for a number of years carried on an agitation for lowering of the rates then existing for freight and express, and to try to get better and improved service.

Eighth. Employment of a permanent transportation expert until such work was transferred to the Federal Government. Mr. McIntosh, who is now engaged with the Dominion Department, was employed by our Association and went from us to the Department at Ottawa.

Ninth. Passing of Legislation for the creating of uniform packages and grades throughout the Dominion. This Association was largely instrumental in the passing of the old Act for the grading of apples, which has been improved to form the present Inspection and Sales Act.

Tenth. The holding of a special apple show for fourteen years as a means of advertising our Ontario fruit.

Eleventh. One of the objects of the Association was to disseminate the information we were gathering from such meetings as this. With that in view we established and carried on for a great many years the *Canadian Horticulturist.* It was afterwards turned over to a Stock Company.

Since the date of the incorporation, the Association has been served by four Secretaries: D. W. Beadle, 1868-1885; L. Woolverton, 1886-1901; G. C. Creelman, 1902-3; P. W. Hodgetts, 1904-22. In addition Mr. Beadle served for five years previous to incorporation. Thirty prominent members of the Association have occupied the President's chair, of whom ten are still actively engaged in the fruit business in Ontario. The original board of directors consisted of nine members, this number being altered from time to time, and now standing at fifteen with an executive committee of five. Each director has a number of counties to look after, so as to cover all parts of the province.

I want to call attention to the suggestions in reference to the change in constitution. I believe there is a feeling amongst the members of the Association that it would be better to make certain changes so as to keep the Association up-to-date and prevent it retrograding in any way. I will read over the suggestions and you may perhaps do with them as you have done with the suggestions in regard to the National Horticultural Council.

1. That the directors would be elected by and from the various local and district associations, instead of being chosen from the different districts. According to our present constitution the Province is divided into thirteen horticultural divisions starting from Ottawa and running to Windsor, and a director to represent each of these is elected here. We propose that we do not elect these directors, but that the local associations elect them to the Ontario Association. At the present time there are some thirty-nine local associations of different kinds in the Province. As a matter of fact that number should be increased, because there are none of the educational associations in the list I have here; these are purely co-operative associations. These would each send a director to form the Provincial Association.

2. The membership would be composed of the members of such organizations by payment of a nominal fee by each association.

The matter of raising funds, of course, is always a serious one with any of these associations, particularly of an educational nature. The suggestion is that the local association should pay a nominal fee to the Provincial body. We have that regulation now in reference to some associations. We have changed it once or twice, but it is still not very satisfactory.

3. The annual meeting should be purely a business meeting devoted to such matters as legislation, transportation, grades, packages, markets, national advertising, provincial and national exhibitions, etc. That is something after the style of the conferences Mr. Baxter holds at Ottawa from time to time, and which are devoted practically to such matters as they think are purely business, and the men who would go from these different local packing associations and educational associations in the province would be the best men to discuss matters of that kind.

4. District meetings should have the backing and co-operation of the Provincial Association, and should be sufficient in number and location to cover every year the various fruit sections of the Province. Summer meetings and excursions through the fruit districts are well worth trying out in Ontario. My idea would be that if the Northumberland and Durham Association was holding a convention or exhibition, the Ontario Association should join with them, and if necessary pay part of the expense in providing an excellent programme with the very best speakers possible, and having the directors of the Ontario Association who are within the immediate vicinity take an active part in the association meeting. Then where there are no organizations in a district. an organization might be formed such as we have in the Niagara Peninsula and the Northumberland and Durham section.

5. The Secretary of the Association should preferably be one outside of the Department of Agriculture, and the funds of the Association should not be so dependent on the grant from the same source. Such a course as oultined would. I believe, make for a more independent and vigorous future. This of course is quite a radical change from the present plan. Your Secretary is an official of the Ontario Department of Agriculture, and a large part of the funds of the association come from the Provincial Government. I do not think that is the right policy to follow in a provincial association of this kind. The association itself would be more independent if it had a Secretary that could say certain things which I might not be able to say because I am an official of the department. Then I think the Association will undoubtedly become more and more

commercial as the fruit industry of the province increases. Certain things that have happened in connection with our Clarkson Association show that we should be able to get together in reference to our purchasing of supplies. We know the prices being paid, as Mr. Sirett said, by the different associations in all parts of the province are not uniform, and thousands and thousands of dollars could be saved if there was some way of getting together on these different lines. The Association might start with spray materials in the spring and so on right through the list. If the Association was independent entirely of the government it would be possible for this to be done.

As far as the grant is concerned I think if the grant from the Provincial Government was large enough to warrant the Association employing an outside Secretary he would not need to be employed the year round; of course, while the work is heavy at periods it would not be heavy when a man would be busy on his farm, and I think it would be possible to secure the services of a good live man who is actively engaged in fruit growing and yet give the necessary time to the Association to do a great deal of work, and it could be done better than under the present arrangement.

6. If thought desirable, the Government departments and Experiment Stations could have representation on the Board of Directors, though as Government officials are always at the service of the Association when advice is needed, such representation is not essential. At the present time Mr. Palmer and Prof. Crow are directors on the Association Board by virtue of their positions, and Mr. Macoun, our efficient Dominion Horticulturist is our representative from number one district. We have always had a very great deal of very valuable help from these men on the Board and this can be continued as at present by allotting a certain number of directors to represent these colleges and stations, and the Dominion Department if necessary. But I think it would be better for everybody if the departments and experimental stations were cut off entirely from the actual directorate officering of the Association. These men are always available just the same as Mr. Caesar or Mr. Ross or any of the men of the department are always available at the call of the directors or the members of the Association for help. I would suggest that the original plan which I have outlined; of having the directorate come entirely from the local and district associations, be followed so that we would have an independent Association, which if necessary could go to the government and seek legislation or say anything they liked and the Minister could not say, as he intimated to me when we were talking about our fruit show, "This is a departmental affair; the Provincial Department of Agriculture is running that show; the Association has not very much to do with it." I would like to see that idea removed from the Provincial Minister's and the Dominion Minister's thoughts, and the Association to be absolutely independent to say and do as it pleases. These are my suggestions, after eighteen years' experience as Secretary of this Association and you can do with them as you please.

COMMITTEE TO DEAL WITH MR. HODGETTS' SUGGESTION

Mr. W. F. W. Fisher, Mr. Fred Watson, Mr. Harry Ryrie, Mr. R. W. Grierson, Mr. Harry Sirett, Mr. W. L. Hamilton.

REPORT OF COMMITTEE ON CONSTITUTION.

Your Committee would recommend that the incoming Board of Directors revise the mode of appointing directors so as to include more direct representation by the leading fruit districts, still leaving representation to those sections that are not at the present time vitally interested in fruit growing. We approve of the suggestion that the Provincial Association assist the holding of district meetings, or co-operating with local associations, and that the annual meetings should be largely business meetings, not altogether cutting out cultural topics. That no action be taken at the present time in respect to suggestions re secretary and grant.

That the C.E.F. be given representation on Board, similar to O.A.C. and the Vineland Station.

The adoption of the above report was moved by W. F. W. Fisher, seconded by Mr. Hamilton, and carried.

THE NIAGARA PENINSULA FRUIT GROWERS' ASSOCIATION.

W. H. Bunting, St. Catharines.

I am very glad to be again at the Annual Convention of the Ontario Fruit Growers' Association. This is the thirty-first Convention I have had the pleasure of attending, with only one break in all that time. And I have always looked forward to this Annual Provincial Convention.

Our Association is a child in comparison to the Provincial Association. The Niagara Peninsula Fruit Growers' Association held its first meeting in November of 1896. The primary object in the organization of the Association, was to bring together the various local associations throughout the Niagara Peninsula, crystalize and organize them in such a way that they might be in a position to do effective work, which could not be done by the local bodies. I had better differentiate between another Society of somewhat similar name and ours; it is a very much younger, but more lusty child, and is known as the Niagara Peninsula Growers, Limited. It is a commercial company, formed only a year ago under the ægis of the Department of Agriculture, and supported by our present Minister of Agriculture, the Hon. Manning Doherty. In the past year it has proved that it has filled a very important place in the commercial life of the Niagara Peninsula. The Niagara Peninsula Fruit Growers' Association was formed on somewhat different lines to the Ontario Fruit Growers' Association. As Mr. Hodgetts has stated the aims and objects of that Association were to disseminate Horticultural education throughout the Province, which at the time of this organization was very limited, and to arrange and provide facilities for an increase in fruit production throughout the Province of Ontario.

For twenty-five or thirty years that Association's efforts were very successful, and until 1895 or 1896 we were producing in many sections of Ontario, more fruit than could be properly handled to advantage: there were no distributing channels for it, and there were very often very serious periods of stagnation and glut. There was a change of Government about that time, the late Sir Wilfred Laurier came into power. There was a feeling there might be a serious change in legislation that would still further affect the fruit industry, which at that time was not in a very prosperous condition. Consequently, one of

the very first efforts of the new organization was to secure legislation of such a character that would be favourable to the further prosperity of the fruit industry, not only of the Niagara Peninsula, but of the entire Province, and the Dominion of Canada. At that time they appeared before the tariff commission that was sent throughout the country, and in other efforts they made they were very successfully headed by the late Minister of Agriculture, the Hon. Martin Burrell, who was, at that time, a fruit grower in the vicinity of St. Catharines. That was the first concerted effort of the Niagara Peninsula Fruit Growers Association that did executive work for the fruit growers of the Province.

Shortly after that it was discovered a very serious pest had entered our fruit growing districts, the San Jose Scale. I brought over with me a few photographs, and I have two in connection with that particular matter, which I think will be of historic interest. I have one photo taken by the late Prof. John Craig, near the town of Niagara-on-the-Lake, of the farm where San Jose Scale was first discovered. Amongst others present at that time were the late Prof. Fletcher, Prof. Panton from Guelph, Mr. Lyons, Mr. Wolverton, Secretary of this Association, and a number of other gentlemen who were very prominent in connection with fruit growing not only in this province, but the Dominion of Canada. At that meeting, held under a magnificent oak tree on this farm, the first resolutions were passed in connection with legislation to endeavour to eradicate the San Jose Scale from this country, and the gentlemen who were present were very active all through the whole course of the anxious years that passed from 1897 to 1902 or 1903, until we were able to secure such remedies as were thought satisfactory, and were able to overcome the serious menace of this pest. As you know, we no longer dread that insect. Those who were in the thick of the fight consider it was a blessing in disguise, because it compelled us to inaugurate better methods, more thorough spraying operations and to take better care of our orchards in general, and consequently put the industry on a better footing in many respects. One of our chief inspectors at that time was so thoroughly enthused about the necessity of destroying this pest that he contemplated that it might be necessary to destroy every fruit tree on the peninsula. We were very glad to find remedies that in the course of a few years obviated that necessity.

One of the first resolutions passed in connection with the appointment of the present body of Railway Commissioners was moved and carried by our Association in 1899. That commission, as you know, was appointed in 1904, and the Ontario Fruit Growers' Association in conjunction with our Association sent representations to that Board and were successful in presenting to it such facts and data as secured very material reduction in the rates of transportation of fruit, not only from the eastern provinces but more particularly from the west, which at that time had not been able to receive any quantity of fruit from the Province of Ontario. Almost immediately following our appearance before the Railway Commission in July 1904, experimental cars began to move to the west and the opening up of that country for the fruits of Ontario was made possible and successful. From that time until the present our fruits have been passing out to the west in increasing quantities. I understand that in the last two years conditions have not been very bright for Ontario fruit in the west. Our British Columbia friends have to a large extent captured a portion of that market from us, due to the fact that we have not been able to keep up the reputation

that was secured. One of the things the Ontario Fruit Growers' Association and all other districts organizations in the province should endeavour to do is to regain, secure and hold that very important and extensive market.

In 1901 the Niagara Peninsula Association in conjunction with the Ontario Fruit Growers' Association was very active in looking after the fruit interests of the Province of Ontario at the Pan-American Exposition in Buffalo. As a result of our efforts there, very great advertising for this province was obtained and very many important awards of merit were received, not only by the province, but by individual growers who had been active and generous in furnishing supplies for the great display in Buffalo.

In 1911 the Niagara Peninsula Association came to the fore when it appeared the adverse legislation was likely to very seriously affect the fruit industry of the province, more particularly in reference to tender fruits. On very short notice a delegation, some 1,500 strong, was assembled in the Niagara Peninsula and sent to Ottawa a resolution to protest against legislation that they thought was likely to be adverse to their interests.

Coming down to later years in the Association, they have been active in the standardization of fruit packages, the improvement of packages, and other movements of an executive or legislative character that has to do with the improvement of the fruit industry, not only in our immediate district but throughout the province.

In looking over the list of members in 1896 and 1897 I notice there are 63 on the roll. Of these 63, 51 or 52 of them have crossed the bar and passed into the beyond. There are only some ten or eleven of these gentlemen left to-day still actively engaged in fruit growing. I was very struck with that fact in looking over the early records of our Association, that so many of the gentlemen with whom I was connected 25 years ago are no longer in our midst.

Another picture brings to my mind a very important improvement in connection with the transportation of fruit. In 1896, 1897, and 1898 we had great difficulty in getting any service from the transportation companies that was at all satisfactory. Finally, in order to force the Grand Trunk Railway Company to carry out their work in a more satisfactory manner, on one memorable occasion the growers in a body abandoned the Grand Trunk shipping station, and went over to our local station, shipping in a very round-about way to reach Montreal and other shipping points without having to avail ourselves of the Grand Trunk. That was a very radical move but it succeeded in accomplishing what we were after.

During all the 25 years, Mr. C. E. Fisher has been our valued and honoured Secretary, and has served the Association without remuneration of any kind.

NORTHUMBERLAND AND DURHAM APPLE GROWERS' ASSOCIATION.

H. Sirett, Brighton.

The Northumberland and Durham Apple Growers' Association was formed in the summer of 1909. One of the principal figures in the organization was the late W. H. Dempsey, at one time President of the Ontario Fruit Growers' Association, and for a good many years an active director on the Board. The object

in organizing the Northumberland and Durham Association was for purely educational purposes. Of course in the constitution the objects laid down were somewhat ambitious. With your permission I would like to read the purposes laid down in the constitution and adopted at the inauguration meeting. I think they are most worthy. We still have those objects in mind and are growing in that direction as rapidly as possible.

"The purpose of the Association shall be to foster, to promote and advance every department of fruit growing, including nursery culture, planting, cultivating and caring for trees at all stages, caring for, handling and selling the fruit, holding meetings, distributing suitable literature, making exhibits and in all other ways to aid in bringing the orchards in these United Counties to the highest state of production, efficiency and profit."

The apple growing industry of Northumberland and Durham at this time was in a very poor condition. There were then very many poor apple orchards in these counties. The farmers during the period of the war allowed many orchards to go into neglect and the hard winter of 1917 and 1918 completed what had begun. So that in the whole district lying just a few miles back of the lake shore, the apple trees are not very productive.

In 1909 the apple growers in that district were seriously concerned with regard to the invasion or multiplication of the oyster shell bark lice and perhaps that as much as anything else caused concern about the future of that industry and the organization of this society whose mission it would be to assist in that campaign of education.

Another reason why we organized: We had an example of the work done in Norfolk by the Norfolk Fruit Growers' Association and the apple growers of this district were impressed with what had been accomplished by the exhibits put on by the Ontario Fruit Growers, of the Norfolk Fruit Growers' Association and they determined that it would be necessary to do something to bring themselves to the fore and attract attention if they were going to hold their place in the production of apples and the sale of apples. So one of the objects they had was putting on an exhibit at the Ontario Fruit Growers' Exhibition. The first exhibit was put on in the fall of 1910, and in succeeding years up to 1913 with a good deal of success and with a feeling of pride, especially in the 1913 exhibit, where we carried off a good deal of the prize money, and some of the important prizes in the larger exhibit.

Following the cessation of the exhibition at Toronto the idea of having exhibits took a less important place. It was felt what we were accomplishing was really a campaign of publicity which had more the effect of enhancing the orchards lands than increasing the value of the apples. We were in the market to sell apples and not land, so we decided to go on but in a different way. During the past five or six years we have laid stress at the annual meetings on the educational side. Our meetings are simply one day meetings and we try to make them as attractive and educational as possible. We do not hesitate to go to some expense to get good speakers that will be helpful to the growers. As a result we have two marked developments in the apple growing industry of our district; one is that these men who have not followed practical methods of apple growing are dropping out almost entirely; the other is, those who decided to stay in the game are practising better methods each year, and it is with these men that the Association is working almost entirely. They are not doing a great deal in the

way of encouraging new plantations, but they are encouraging the taking care of the orchards which are there now, and keeping them up to a certain standard of production.

We have in mind a number of practices. We feel that the educational work is not sufficient in itself, but that a great deal could be done to help the growers to procure supplies and also to sell apples. We are not anticipating that we are going into the securing of supplies, but we hope to keep more closely in touch with the cost of supplies in order to advise our growers from time to time just what these costs are. The gentlemen present are practically all members of other associations and know the cost of supplies this year. I find that the manufacturers of baskets are demanding fifty per cent. higher from one group than from another, and it is our intention to get away from that excessive cost in purchasing supplies and to keep in touch with the market prices, and to advise our members. If the growers know what is a fair price they are able to deal more successfully with the agents in the purchasing, and we endeavour to control the situation in that way.

In a small association such as ours, there is not a great deal that can be said. This year our annual meeting has been one of the most successful we have ever held, and we are looking forward to the orchards that are now in the hands of men who are making a business of fruit growing having new plants rather than more replacements in the course of a few years, and that we will win back the situation that has fallen away during the course of four or five years.

I think the production of apples in the counties of Northumberland and Durham has fallen away at least forty per cent. in the last seven or eight years, due to the disappearance of orchards that were planted away from the lake shore, and which have been neglected and have simply disappeared.

A NATIONAL HORTICULTURAL COUNCIL.

C. W. Baxter, Fruit Commissioner, Ottawa.

At the Third Dominion Conference of fruit growers, held in Ottawa in 1912, a committee composed of representatives of each provincial fruit growers' association was appointed to consider the question of the formation of a National Fruit Growers' Association. The committee, after due consideration, submitted a report recommending the organization of a national body to be called "The Canadian National Fruit Growers' Association." They also submitted a constitution and by-laws. The report was adopted by the conference and the fruit division, then a part of the dairy and cold storage branch, was requested to elect by correspondence ballot the provisional officers. The late Mr. Robert Thompson of St. Catharines was elected president, and Mr. P. W. Hodgetts, secretary of the Ontario Fruit Growers' Association, was elected secretary. I am not aware that the Provisional Board held more than one meeting. Two years later (1914) another conference of the fruit growers of Canada was held, and in looking over the report of the proceedings of that conference we cannot find that any reference was made to the question of a national organization. However, we have been advised that it was generally felt that as the fruit division had been raised to the status of a branch and would devote its whole attention to fruit, there was very little need for a national organization.

Ten years have elapsed since the question was first considered, and many changes have taken place in the horticultural world during that time, and to-day we find that the horticultural industry is the only branch of agriculture that is not represented by a national organization. It is true that we have Provincial Fruit Growers' Associations and other organizations which have done and are doing excellent work for the fruit growers in their respective provinces and for those engaged in other activities in connection with horticultural work, but there is no means of co-ordinating the work of the various organizations within the provinces nor of co-ordinating the work of the Provincial Fruit Growers' Associations except through the Dominion Fruit Conferences which have been arranged by the Dominion Department of Agriculture from time to time.

The fact that other branches of agriculture have organized into national organizations is not sufficient reason why those engaged in horticultural production and the allied industries should also organize, but it has been suggested that there are many advantages to be secured by the formation of a national organization and that the present is a very opportune time to consider the whole matter. Therefore, it has been arranged that the question shall be discussed at the coming Dominion Fruit Conference, which is to be held in Ottawa on February 22nd, 23rd and 24th next.

When the matter was discussed in 1912 there was no doubt of including in a national organization any but fruit growers, but it is now proposed that the national body shall include, in addition to fruit growers, representatives of producers of various horticultural products, such as potatoes, other vegetables, flowers and nursery stock, manufacturers of fruit, flower and vegetable containers, wholesale dealers in horticultural products, and fruit and vegetable canners, all of these being more or less interdependent.

In order to facilitate discussion it was suggested that the fruit branch outline some of the objects which such an organization might attain, and also prepare a draft of a constitution and by-laws. This has been done and the constitution and by-laws of the National Dairy Council were used as a guide. The object of such an organization would be the advancement of all matters tending towards the improvement of the horticultural industry in Canada, including production, grading, packing, transportation, storage, marketing, etc.

(a) By initiating, fostering and assisting in obtaining such legislation and regulations as will be beneficial to the horticultural industry.

(b) By encouraging the holding of horticultural displays, the distribution of literature and by systematic advertising, informing the general public as to the value and general use of horticultural products.

(c) By encouraging the adoption of uniform standards of grading and packing and assisting in developing home and foreign markets.

Time will not permit of taking up the various clauses in the tentative constitution or the by-laws set forth in the draft but at any rate if the principle meets with approval there will, no doubt, be many changes made. I may say, however, that this draft has been submitted to several of those who are actively engaged in scientific and commercial horticultural activities, and practically all have expressed their approval of the formation of a national body representative

of the industry in its broad sense, and feel that the present time is a very opportune one to consider the whole matter. If it is the wish of this Convention to discuss the matter, I shall be glad to explain some of the principal points in connection with the tentative constitution and by-laws.

It has been pointed out by some that the policy of the Fruit Branch of the Dominion Department of Agriculture in holding Dominion Fruit Conferences, from time to time, and the service which has been established by the Dominion Fruit Branch have so far fully met the requirements of the industry. However, it would appear that a national organization might offer some advantages over our past methods, by reason of the fact that it would permit of complete independence from all government bodies or institutions, thereby giving a larger feeling of freedom of speech and action.

The Provincial Fruit Growers' Associations have been very generous in giving their support to the fruit branch, which has been very much appreciated, but it is generally recognized that weight of numbers having a unanimous opinion gives a larger possibility of success when dealing with questions of importance to the industry. Matters of policy and procedure requiring urgent attention and action could be speedily dealt with. A national body also permits of the horticultural industry taking its place on an equal footing with other agricultural industries having national organizations. Occasions may also arise where the combined efforts of all national organizations may be effective in obtaining for agriculture better conditions.

Mr. Hodgetts: In connection with this matter there have been a couple of meetings held in the province lately called by the Florists' and Gardeners' Association. It is an association of the commercial florists, men engaged in green-house work and the raising of flowers of all kinds, and they have invited representatives of the amateur florists, members of the Horticultural Society, civic improvement leagues and so on, to fix a committee meeting in Toronto to deal with this matter. The matter came up for discussion a month ago and we promised we would put it on our programme for discussion to see if the Fruit Growers' Association thought enough of it to go ahead and amalgamate with them.

Instead of a National Fruit Council we would have a National Horticultural Council embracing all lines of horticulture, both commercial and amateur. The matter of finance is always a serious one in connection with organizing, and to bring the directors from the various parts of the Dominion of Canada is an expensive matter. I do not know how they have worked it out in connection with the live stock and dairymen's unions, but the cost will probably be one of the problems we will have to meet.

Mr. Baxter: Mr. Hodgetts has stated that the financial end of an organization is one of the most important points. We have given it consideration from various angles, and we have felt that as the Provincial Fruit Growers' Association is probably the biggest association along horticultural lines in the province that they might form the nucleus of the provincial council, or sub-council as you might call it. There are various matters to be considered and it must be worked out on a membership basis.

Now I feel that the allied industries are particularly keen to appreciate the benefits that would come from a national body and would be prepared to financially support such an organization; but we all realize that the fruit growers

are going to be in the majority and should be, because they are probably represented by the greatest number. The matter of finance is quite a problem, but if the work of the national organization could be carried on, and I believe it could be carried on to a great extent, by a permanent secretary, the financing would not amount to a very great deal when spread over on a membership basis. I did not mention the financial policy, because we felt that if the general principle was adopted the financial end could be worked out by the provincial sub-committees or provincial councils.

REPORT OF THE HISTORICAL COMMITTEE, 1922.

A. W. Peart and W. T. Macoun.

The year 1921 will go down in the history of fruit growing in this Province as being remarkable in many respects.

The winter was mild, with very little snow. As a result trees and bushes and vines were practically without injury by frost.

During the spraying season there were frequent showers which interfered materially with the good effect looked for.

The last week in June and the whole of July were exceptionally hot, being several degrees above the normal. The heat was accompanied by a drought which lasted well into September. Nothing like this drought had previously occurred in the history of this generation.

Bartlett pears were picked the latter part of August and other varieties of pears, as well as apples and grapes, were harvested about two weeks earlier than usual.

As a result of the adverse conditions apples especially were low in quality, being attacked by all the known enemies, and many unknown ones as well. Upon the whole the dormant spraying kept the San Jose scale pretty well under control, but the black knot, especially on the plum trees, seems to be increasing, and will certainly have to be fought with energy in order to save our orchards.

During the spring the Niagara Peninsula Growers, Limited was organized with head office at Grimsby, this co-operative association includes the Niagara Peninsula and Burlington districts. In spite of the adverse fruit conditions this new undertaking, large as it is, has thus far made a success and justified the hopes of its promoters, having done a business of about $1,500,000.

At the Imperial Fruit Show held in London, England, last year, the Province of Ontario made eighty-four entries in the over-seas section and eighty in the British Empire section. Ontario was awarded a silver cup, value £100, for the highest aggregate of points with exhibits in fourteen classes of the over-seas or United Kingdom sections. Ontario also won two cash prizes of ten and twenty-five pounds sterling, and W. L. Hamilton, Collingwood, £20 cash for exhibits of apples.

It should have been recorded sooner, that in 1912, at Dundela, Dundas County, Ontario, there was a monument erected in honour of the McIntosh red apple and John McIntosh, its originator.

Mr. W. W. Hilborn, a well-known Canadian horticulturist, died at Leamington, Ontario, on December 10th, 1920. He was the first horticulturist of the Central Experimental Farm, Ottawa, being appointed in 1887. He resigned his

position at Ottawa in 1889 and was a private grower afterwards until his death. When he was appointed horticulturist at Ottawa, he had to organize the work of the division and to establish the first experimental plantations. At that time experimental work was in its infancy in Canada, but Mr. Hilborn, who had been a practical fruit grower before that time, knew the problems of the fruit growers and was able to begin useful experiments which have since been of much value. After leaving Ottawa he went to Leamington and lived there until his death.

THE IMPERIAL FRUIT SHOW: ITS RESULTS.

W. L. Hamilton, Collingwood.

You will all be interested to know the kind of fruit we took over to the Show, where we got it and how it was received. In the prize list there were fourteen varieties in the over-seas section, namely Snows, McIntosh, Wealthies, King, Golden Russet, Spy, Blenheim, Jonathan, Spitz, Greenings, Cox Orange, Newtown, Stark, and any other variety. In the British Empire section, there were two classes: One cooking and one dessert. We entered in the over-seas section thirteen varieties, being unable to locate Cox Orange. In the British Empire section we made two entries in the dessert class: Russets and Kings; and in the cooking class: Spies and Greenings. Mr. Ryrie of Oakville furnished the Wealthies and Wageners. The Kings, Blenheims and Greenings were grown by Mr. Breckon of Bronte; Spies and Newtons by Mr. Challand of Simcoe; Spitzenburgs by Smith Brothers of Oakville; Jonathans, Mr. Langell of Point Pelee; Starks, Mr. Little of Trenton; Snows, McIntosh and Russets from Collingwood.

The fruit landed in excellent condition, and we are very much indebted to the Dominion Express Company for the way they handled it and looked after us over there. The boat got into Liverpool on Saturday, and the apples were unloaded before any passengers were allowed off, which was quite a concession to us, so we had our exhibit ready by ten o'clock Monday morning as was required.

The Wealthies were the first to be judged. They were very fine and scored 100 points. They were so good that the judges were doubtful that they were Wealthies; so doubtful that they called Mr. Carey over and asked him if Wealthies grew like that in our country. We secured first prize on the Wealthies.

The Snows scored ninety-nine, being cut one point for colour; I do not know whether they were cut for too little colour or too much. We got second prize on the Snows, being beaten by New Brunswick.

McIntosh were also beaten in first place by New Brunswick; the fruit being larger than we would have liked.

Kings were furnished by Mr. Breckon of Bronte, and were the finest Kings I ever saw in such quantity in my life. They were of as high colour as the Jonathans, but lost two points for having too much colour, and got second place. On asking the Judge why he cut them for colour, he said the Chairman of the Judges had instructed that the apples should represent normal size and colour for variety and these being above normal, were cut two points.

For Golden Russets, Nova Scotia received first and second, and New Brunswick third, while we got highly commended. I think the judge was wrong in his second placing, both our own and third prize boxes being superior.

Spies scored full 100 points; they were easy winners. There was no question that Ontario had them all beaten; British Columbia Spies could not compare with our apples.

Blenheims. We did not get any prizes on this variety, but they were very fine. They were cut three points for colour, but they were beautiful. British Columbia took first place on the Blenheims but they were only No. 2 size; we would not consider them No. 1 size at all for Blenheims.

Jonathans. We did not get a prize on Jonathans, as they were cut for colour, but were a very fine lot.

I think the judges tried to be fair, but they were not box judges; they knew nothing about boxed apples nor about the types of varieties or the fullness of the pack or alignment.

Spitzenburgs. We took second place; being cut five points for colour; they were fine Spitz, but not high enough colour.

Greenings took second place; they scored ninety-seven points, and were also cut on account of colour.

Newtown Pippins scored 100, and the score card was marked "Excellent."

Starks were cut heavily for colour, and we did not get a prize. We had to pick them a week before we left here, and it was away too early for this variety.

Any other variety. Mr. Ryrie's Wageners were entered in this class, scoring 100 points. They were very fine. The second prize went to British Columbia on Delicious, and the third to Nova Scotia on Princess Louise.

In the fourteen classes that competed for the Challenge Cup, we got four firsts and five seconds, and we secured the cup by winning the most points. British Columbia boasted of having more medals than we had, which is true, but they had about four or five entries to each class, and should have taken four or five times as many medals.

In the British Empire section, there were six or seven entries, in the twenty-box lots; Ontario had Kings and Russets; British Columbia, Jonathans and Cox Orange; Quebec, McIntosh.

The three judges judging the over-seas section selected the twenty-boxes of Cox Orange; they passed over everything else. The twenty boxes of Kings made the finest exhibit in the show; they were perfect, 125 to the box, but the judges did not even look at them; they said nothing could compare with the Cox Orange for dessert.

Considerable trouble arose in the cooking class. Three judges selected the Ontario Spies and Greenings as the best entries in that section; Spies first and Greenings second. Three judges from the United Kingdom section selected the Newtown Wonders and Bramley Seedlings as the best two lots from the United Kingdom. Finally, they gave the prize to the Newton Wonders. Then one judge wanted the Greenings to take second place, but the other judge wanted the Bramley Seedlings in the second place, so they locked on these two. The Chairman of the judges gave the prize to the Bramley Seedlings, but he afterwards admitted that our Spies and Greenings were very fine; he had not seen them before.

We have pictures of twenty boxes of Spies and of Newtown Wonders. The Newtown Wonders had excelsior packed at the sides of the box and the boxes were not filled. They used the argument that "You people have to come 4,000 miles, and lots of our exhibitors only come fifty miles." I asked one of the judges why

they put excelsior in the bottom, he said "For the same reason you use paper!" I said "We put it around the apples, not at the end of the box." That is the reason we lost on the twenty boxes of Spies. It was a £50 special, and we would like to have brought it back with us.

We took enough fruit over for a commercial exhibit also, and put up a very nice exhibit for the Province. The show on the whole was very fine; there were about 8,000 cases of apples besides half barrels, though I do not think I noticed any full barrels. But the building is so large and the apples were scattered around in the different wings. that it did not look as massive as it otherwise would.

Our McIntosh apples got a great boost. Some of the officials of the show took a fancy to this variety and getting several boxes, distributed them among their friends. If we got nothing but the boost to our McIntosh, it paid us well for having gone over. Mr. Bussy of the *Daily Mail* had a party of friends in one night; he took several McIntoshes and Cox Oranges and peeled them and passed them around. He asked his friends to decide which was the best variety, and everyone to a man chose the McIntosh.

MR. HODGETTS: Do you think it would be worth while going back another year?

MR. HAMILTON: I would not go back unless we knew who was to judge the apples. If we were to have American judges who knew something about box apples, it would be all right. I think the judges were honest, but they did not know boxes, and did not take into consideration the types of the varieties.

THE IMPERIAL FRUIT SHOW.

P. J. CAREY, TORONTO.

I was very pleased to have the privilege of being over at the Imperial Fruit Show, and do my best for the Dominion.

I want to say a few words in explanation of the story that got considerable prominence that the Canadians were not fairly treated over there. It is true that we felt in a few cases we were not fairly treated, but on the whole, as Mr. Hamilton says, I think the judges did the best they could. *The Daily Mail* did not understand the running of the show, and the judges did not know the work, and between the two we had some disappointments. That is about all I can say in regard to that. As I understand it, *The Daily Mail* did not have Canada in its mind at all when they started the show. The idea was to stimulate the growing of home-grown apples. They went so far as to say England could grow enough apples not only for their own use but leave a margin for export. I noticed in their prospectus nothing was said about Canada nor the over-seas fruits at all; we were just allowed in to help make the show a better show, to lend colour to it, and it was fully understood we were not part of the show to begin with. That being the case, we cannot find very much fault.

I must say I sympathized with Mr. Hamilton in his work for the Province. I found the boxes that held these Newtown Wonders were not lawful boxes at all. They were twenty inches long, when they should have been eighteen inches, and they should have been disqualified right at the start. Two young men who were teaching box packing there were appointed a committee to cut out all the entries that they thought would not be placed in the money, because it was thought there was not room enough in the show for all the exhibits, and they

set these particular Newtown Wonders aside, because the box was not the right size. Later on in the day, they got an order that there was plenty of room for all entries, and this lot again slipped in and won first prize, so you can plainly see that there was a little room for complaint there.

I think we are good sports in Canada, and I am sorry we said anything about the matter. It got abroad in the Old Country that the Canadians were not treated properly, and of course the newspapers, as usual, made a great deal of it. It was a little unfortunate we said as much as we did; it may be the cause of not being invited again. Mr. Baxter will be able to say whether we are to exhibit next year, but if we do it will be under different regulations. I would say we should have judges from the United States or some outside country that were not interested. If that is not so, Canada should be represented on the judges' staff.

Then the regulation to remove the wrappings off the two top tiers was simply absurd. I am not too modest to say I took a hand for four days in fixing and repiling the British Columbia lot, taking off the tops, the wires, unwrapping the top two tiers of the boxes and replacing them, and nailing on the tops again. We were forced to nail them on because the space was so limited; we had to pile them seven and eight deep in order to wait for them to be placed on the judges' stand. Some of the boxes were just a mass of apples; they were loose to begin with, and when the wrappers were removed they just ran together.

New Brunswick perhaps won the most notable prizes of any Province. New Brunswick said, "If we have to remove the wrapper before they are judged, we will leave them off," they did not wrap the two top tiers; they simply put them in as tight as they could and shipped them over, and they arrived in first-class condition. New Brunswick got first prize in McIntosh Red and Fameuse: Quebec was down to win these two prizes, because they are their special apples. I believe the Quebec apples were just as good, but the pack was a little loose and the box did not show up. Quebec felt so badly over it, that I believe they blamed Mr. Smith and myself for not getting the prizes, but we did everything we could do for all the Provinces. There was absolutely no one except Mr. Hamilton, Prof. Blair and myself who had a knowledge of fixing up box apples for prizes.

I think we had better be sports and not say anything about being badly treated over there. Perhaps the treatment was coming to us. They had only one thing in mind: to make themselves solid with the people of the country and the growers of the country. As far as the *Daily Mail's* idea is concerned, it was admirably achieved; they got the people all stirred up, and they are going to plant millions of trees, and that may make some difference to the fruit growers of Ontario and the other shipping Provinces. But let me tell you this: the life of the English apple, as I judge it, is about over the 1st of December, so that there will be no competition against our winter apples, unless they build cold storages and prolong the life of their apples. Their present method of marketing their apples is picking them from the trees and putting them on the market. That is all over about the middle of November, so they cannot hurt our competition beyond our fall apples.

The principal point which we gained over there is this: The English consumer, for the first time, had an opportunity of seeing Canadian apples in a mass. Up to the time of the show, they only saw them when they bought them by the pound and took them home. A quarter of a million people passed through the show and could see our apples at their best, and they marvelled at the appear-

ance of them; they could see the superiority of ours over the English apples. It was plain to see—beautiful red shining fruit as compared with fruit lacking colour, or with a sickly colour.

In the English exhibit there was scarcely a box of apples that did not contain some apples partially decayed. I counted fourteen in one box entirely broken down, showing that the keeping qualities were not there. While in the Canadian apples, you would think they had just been picked off the tree. I had an opportunity of seeing all the Provincial entries, and I did not see one single specimen that showed signs of bad handling, and we cannot say too much in praise of the Express Companies for the way they handled our shipment.

I feel honoured in being chosen one of the representatives of the Dominion of Canada in the Dominion Exhibit.

Mr. Baxter: I just wish to correct an impression that might be gained from Mr. Carey's statement with regard to Quebec's attaching some blame to himself and Mr. Smith for their failure to obtain prizes. As Mr. Carey states, that was a fact, but it was due to the report issued that Quebec's exhibit failed to arrive and did not find a place among the contestants. That report was groundless, because every box that Quebec sent over was given a place and competed for a prize, so while the Quebec people did feel that they did not receive the attention from my officials that they should, that has been altogether corrected, and they now have nothing but appreciation for the efforts put forth by Mr. Carey and the other representatives from the Provinces to give Quebec the best showing possible. They have expressed to me their hearty appreciation, and they regret that such a report had been circulated.

If it is in order to refer to Canada's further participation in an Imperial Show, I will refer briefly to a letter I received from our Fruit Commissioner, Mr. Forsyth Smith. It was my honour and privilege to act as Canadian Secretary to this Imperial Fruit Show, and while, as has been stated, we may not have had an altogether fair showing, nevertheless, I think it paid us well, what we received together with the entertainment. Mr. Howard Shipman, Horticultural adviser to the *Daily Mail*, who were the promoters of this show, some time ago asked if I would say what they might hope from Canada by way of support in future shows. We heard something of the little dissatisfaction that had occurred, and we replied that we would have to reserve decision or withhold our opinion until we received our official report. When this came, the criticisms were so severe that we decided it would be better not to publish them. Mr. Carey and Mr. Hamilton have said there were probably reasons for the judging—inexperience being the greatest of these—being amateurish all through. In future we hope for better treatment, but we did not publish that part of the report. We sent a confidential report to the newspapers for their future guidance, and also our prints of the photographs.

A meeting of the Advisory Committee was held in London on January 19th, and I was asked to give an opinion as to the possibilities of Canada again participating in future shows, as it is proposed to make this an annual event. My suggestion was that Mr. Smith, being Canada's representative on this committee, should assume the attitude that Canada would participate in future shows to a much greater extent than in the past. By so doing, it would enable him to obtain for us the best regulations possible. After that had been done then we could decide as to whether these regulations and assurances of scientific judging

and experienced judges was such as would lead to our further participation. I have just received a report from Mr. Smith as follows:

EXTRACTS FROM MR. SMITH'S LETTER TO MR. BAXTER.

"As your cable expressed the view that Canada would like to participate again, and as the Agent-general for Ontario had heard from his people and the representative of New Brunswick from his, that they would support another show on a greater scale, we all, finally, agreed to attend the meeting, to raise no awkward questions at this stage, and to convey the general idea that Canada would be glad to be represented.

"Mr. Bussy announced that the "Daily Mail" would finance another Show, that it was proposed that it should again be held in the Crystal Palace, and at approximately the same date, the exact date to be settled later. He evidently has it in mind that it shall be an annual event, for he said that he did not think it advisable to give medal prizes, as medals would then become too common, but would offer Challenge Cups, to be held for a year only, until won three times in succession by one competitor, to gether with money prizes to be awarded each year. I shall, of course, endeavour to have the latter made as substantial as possible.

"A resolution was, also, passed that the scope of the Show should be enlarged to take in citrus fruits, and pineapples, to be furnished by South Africa, and pears. It is possible, also, that peaches will be added to the list, in which case I think it would be advisable that Canada should send forward exhibits of the last two fruits.

"A suggestion was also made that New Zealand and Australia should show cold stored apples. (In view of their season, it is manifestly impossible for them to show fresh apples). This, however, did not seem to appeal to the Australian and New Zealand representatives, as, of course, they have no object in exhibiting cold storage apples, which they could never hope to sell commercially in the height of the English, Canadian and American fresh apple season.

"A similar suggestion made with reference to Canada (i.e. as to our showing storage apples of the previous year, as a means of reconciling English desire for an earlier date for the Show, with the impossibility of our showing new season apples at such a date) was promptly negatived by me. There would, of course, be no object at all in our showing storage apples which we could never expect to offer commercially.

"No date has yet been fixed for the meeting of the Advisory Committee, but this will probably be held inside of the next month."

Mr. Smith was instrumental in getting the management to greatly increase the financial prizes on the ground that Canada would be put to a great expenditure in bringing their exhibits some 6,000 miles.

Mr. Smith asks for our further opinion as to Canada's participation and also for certain support in his efforts for better conditions.

"There was another point settled at the meeting to our advantage; it was agreed we should have two representatives on the sub-committee. I, of course, am one. The other has been left for us to nominate, and will probably be the 'scrappiest' Agent-General I can select." Mr. Smith further states.

Personally I believe if we can succeed in getting better rules and regulations and some guarantee that they will be strictly adhered to, it has been and will be one of the best avenues for advertising the Canadian apple in the Old Country markets that we could have. I hope we will succeed in doing so, and if we do, we will go back with a much better exhibit, and notwithstanding all the handicaps we will still win out.

PRESENTATION OF MEDALS TO THE WINNERS.

AT THE IMPERIAL FRUIT SHOW.

THE CHAIRMAN: I hold in my hand a gold medal, First Prize, Class I. Wealthy Apples, won by Mr. Harry Ryrie of Oakville. What I have to say to you, Mr. Ryrie, will apply to all the rest: you have done signal honour to the

fruit growers of Ontario and also to this Association, and we feel as growers that we are indebted to you for producing apples of sufficient high standard to bring back such a medal as this.

Second	Prize	Medal,	Mr. Hamilton, Collingwood, for McIntosh Apples.
"	"	"	Mr.Breckon, Bronte, for King Apples.
First	"	"	Mr. C. W. Challand, Simcoe, for Spies.
Second	"	"	Mr. Smith, Oakville, for Spitzenburg.
"	"	"	Mr. Breckon, for Greenings.
First	"	"	Mr. Challand, for Newtown Pippin.
"	"	"	Mr. Ryrie, for Wagener.

Bronze Medal for 20 boxes of Greenings in British Empire Section presented to Mr. Breckon.

Mr. Hodgetts: When the Show was first mooted, and we were asked if we would make an Exhibit, our Minister said to go ahead if we could get the apples, but he thought it would be better if the Exhibit was put up by the Ontario Fruit Growers' Association. We first advertised that the Show would be held and anyone wishing to make an entry should write to the Minister, and that the Department would pay the expenses of sending over the fruit. There was no response, and we had to go up and down the country to locate the apples. It was a bad year, and we had trouble in getting apples which could meet the competition we knew we would be up against in London. We went first to the people who had won prizes at our Provincial Shows in the past, and it was not a great while before we located everything except the Cox Orange. Cox Orange is a great favourite in the Old Country, and we thought if we sent any over, we would have a chance to win first prize. The tree was planted here a good many years ago, probably by some of the early English settlers; there are trees, in some of the older orchards, but we could fine none bearing this past season.

Jonathan, Spitz and Newtowns are typical western varieties, and we thought it would be nice to beat them with their own varieties. We succeeded with Newtowns from Mr. Challand's orchard at Simcoe, but with the Jonathans we were cut for having too much colour. There not being the requisite five entries we failed to get the third prize which we should have been entitled to.

We secured Wealthies and Wageners from Mr. Ryrie's orchard at Oakville. Mr. Ryrie's orchard is one of the largest young orchards of the Province, and we had no trouble whatever in securing from him sufficient of the two varieties on which we took the two gold medals which have just been presented to him.

We went to Mr. Challand of Simcoe for Spies, because we figured the Norfolk Spies would have a better colour and would be in prime condition at the time of the Show which was in October. Farther north or east they would not be so ripe. Mr. Challand certainly had Spies to win over there, but we were disappointed on the twenty box lot in the British Empire Section. In the six box lot, we had no trouble in winning the gold medal on the Spies. Mr. Challand has an orchard which is certainly a credit to himself and to the Province. Mr. Challand also provided us with the Newtown Pippins which carried off the gold medal.

When we looked for Kings and Greenings, we turned to Mr. Breckon of Bronte, because he had always run Mr. Hamilton a close race on these varieties, particularly the Greenings, at the Toronto Show. Mr. Breckon has not a young orchard, but there is no cleaner orchard, as far as cultivation and fruit is concerned, in the Province. If we ever have any excursions from this association, I would like to take the members down to see Mr. Breckon's orchard. He not

only had the twenty box lot and the six box lot, but he could have furnished us with a 100 boxes. The trees were laden, and the fruit was uniform in size with a nice clean skin.

As far as Spitzenburg is concerned, there are not many trees in the Province. We understood Smith Brothers of Oakville had a few which always produce nice apples. so we got our Spitz there taking the silver medal at the Show. It was a little early to get the best colour, and we were cut on that. Smith Brothers, also have extensive orchards showing careful handling.

The Jonathans came from Point Pelee. There is some discussion on this and other varieties later in the programme: it is claimed we cannot grow them in Ontario, but we were fortunate in locating the orchard of Mr. Langell which is largely planted with Wealthies, Jonathans, and other western varieties. Mr. Langell is growing Jonathans very successfully in a commercial way near Leamington.

For Snows and McIntosh we turned to Mr. Hamilton of Collingwood. It was difficult to get the McIntosh small enough to win a prize in Great Britain. Mr. Smith had warned us to take the smaller sizes over there because they were favourites in the British markets, but this year we could not get the size we wanted and had to be content to take second place with Snows and McIntosh. Golden Russets came from Mr. Hamilton' orchard also, and were representative of the Province, but Nova Scotia had better russets, securing the gold metal.

We had to go east for Starks, getting them from Mr. Little's orchard at Trenton. It was too early in the season to get the colour we would like so we were not in on the prize money on that variety.

Mr. Carey: I would like to say a word about the Federal Exhibit. There were four contributors from the Province of Ontario. With the exception of five boxes of apples from British Columbia and five from Nova Scotia, the balance were taken from Ontario. Snows and McIntosh we secured from Mr. Ernest Robinson. Mr. Harold Jones, Mr. Breckon and Mr. W. H. Gibson of Newcastle were the other contributors, and the apples were as near perfection as possible.

Mr. Hodgetts: I want to mention the name of Mr. Gilbertson, from whom we got apples for our Provincial Exhibit. The balance we secured from Mr. Breckon and Mr. Ryrie.

SURVEY BY DIRECTORS OF THE DIFFERENT DISTRICTS.

District No. 1: Renfrew, Lanark, Carleton, Russell and Prescott.

Mr. Macoun: I should like to present a more favourable report of that section of the country than I am going to do, but I presume you want an honest report, so I will stick to facts.

District No. 1 includes the counties of Renfrew, Lanark, Carleton, Russell and Prescott. The fruits which can be grown successfully commercially in this district are the apple and the American and hybrid groups of plums among tree fruits, and the currant, gooseberry, raspberry and strawberry among small fruits. In addition to these the hardiest pears succeed in the most favoured parts of the district and are planted, to a limited extent, for home use only. Many varieties of grapes will ripen every year, but because the vines have to be covered with soil in winter they are not grown commercially. The sour cherry bears

a crop, perhaps, two to three years out of five and the same may be said of the European or Domestica plums, hence these are not commercial fruits, but are grown to some extent for home use, and a few may at times be offered for sale.

All the cities, towns and villages in these counties could be supplied with apples, certain kinds of plums, and currants, gooseberries, raspberries and strawberries produced in the district if sufficient growers would undertake to do this, but it would seem that persons with the horticultural instinct usually desire to be near other horticulturists, hence instead of building up the fruit industry in their home district they move to the fruit centres.

As the Agricultural Representatives who travel much through the counties they represent are in the best position to know what is being done in fruit growing in their counties, a letter was sent to each one of them asking for information.

Mr. Fred Forsyth, Representative for Lanark County reports:

"In reply may say the fruit industry is a very neglected branch of farm work. True, there are a few odd farmers planting a small number of trees solely for local use. The varieties of these trees cover largely Transparents and McIntosh Reds. Orchards generally have been sadly neglected and little or no care is taken of them at all. I do not think I can give you any further information that would be of value as there is so little interest taken in fruit growing here."

Renfrew County: Mr. M. H. Winter, representative for Renfrew County, reports as follows:

"As you know, there are very few apples grown in this county for commercial purposes. I do not imagine we have over forty acres set out to apples. The greater part of this acreage will consist of from five to forty trees around a man's home.

"Some of our younger orchards are looking well, but it usually happens that about one-third has to be replanted before the trees reach an age of six years. The loss is caused largely by winter killing. While some orchards have been planted over 20 years, and appear fairly hardy, my experience has been that trees do not live over 15 years.

The varieties mostly grown are Yellow Transparent, Duchess, Wealthy, Fameuse and McIntosh. Of these, the Duchess and Wealthy probably give the best yields. We also have a considerable number of Alexanders, Wolf Rivers and Scott's Winters. I would estimate that from 200 to 300 acres are being planted annually.

Following is a report from Mr. Ferdinand Larose who represents Prescott and Russell Counties:

"Re fruit growing in Prescott and Russell Counties. I beg to inform you that to my knowledge very little is done along that line, except in apple growing. The orchards are generally in poor shape due to bad winters of 1917 and 1918. There are very few good orchards, and in my opinion a campaign should be started. There is an exceptionally good section in the vicinity of Vankleek Hill which should be utilized to a much larger extent for the purpose of apple growing. As to the number of trees which were planted since my appointment in the fall of 1919, only two farmers asked information about planting of any trees, and this was only for very small quantities of a dozen or so."

Carleton County: There is no report from the representative of Carleton County, but as we live in that County ourselves, we may say that apart from the Experimental Farm Orchards at Ottawa, there is little planting in the County, and the orchards are about in the condition described for the other counties.

The market gardeners about Ottawa are planting a few trees each because they find it very profitable to sell apples in baskets with their vegetables.

After thirty-five years' experience in fruit growing at the Central Experimental Farm, Ottawa, we should say that there are three main reasons for the industry not developing to any extent: First, because, as stated at the outset, most men with the horticultural instinct, born in rather rigorous climates, are inclined to move to a milder climate where they can grow a greater quantity of fruit. Second, the winter injury is very great at times. Since 1887, we have had winter killing in 1895-1896; 1903-1904 and 1917-1918. Those who have not the hardiest varieties become discouraged because of the large proportion of their trees that are killed. Third, the injury from mice is at time very great, unless the trees are protected regularly every year. This one cause has discouraged many, as trees just coming into bearing may be destroyed.

Notwithstanding these difficulties, the great success of the Central Experimental Farm orchards is good evidence of what can be done if orchards are cared for, and the proper varieties planted. The many new and promising varieties of apples originated at Ottawa should be of much value in future development of the industry in Eastern Ontario.

District No. 3: Lennox, Addington, Hastings, Prince Edward.

Mr. Ireland: In Prince Edward County we can raise the best apples of any county in the Province. We have a climate that gives a nice flavour, though we do not always get the best colour. We can grow the very best sour cherries; some of the farmers have as many as 20 acres of these. The apple orchards have been neglected a great deal for the last seven or eight years, and they are planting no new orchards worth mentioning since the over-production scare of 1910. About 90% of the farmers in our county would rather have a farm without an orchard than one with it. The side worm was a great drawback to us during the past season; many of the apples were not fit to market.

District No. 4: Northumberland, Durham, Peterboro, Victoria.

Mr. Sirett: My remarks this morning deal with the situation so far as apples are concerned, that is, all the districts not approximately near the north shore of Lake Ontario are very rapidly going out of apple production. In the Counties of Peterboro, and the North part of Northumberland and Durham, there are comparatively few orchards that are producing any apples except as incidental to their other work; no care is being taken of them. Mr. Ireland's remarks with regard to men preferring farms without orchards applies to this district. In the apple districts, the situation is very much more encouraging of course. Our trade is largely an export one, requiring a good shipping apple; an apple such as the McIntosh, Fameuse, Spy and similar varieties are not good export apples. The Baldwin perhaps represents more than any other variety the characteristics required in a first-class apple. Unfortunately the Baldwin has not given satisfaction; they produce a considerable quantity of apples, but I question whether you can find a Baldwin tree that has not suffered winter injury. The producing of a hardier type suitable for our export market is a problem that has concerned our local Association for a number of years, and some effort has been directed towards interesting the Government in producing such an apple.

An apple that was rather important in our district previous to the winter of 1917 or 1918 was the Cranberry; it suited our demand admirably, but it was almost entirely wiped out in that winter. The Cranberry, Ontario, and to a certain extent the Stark and Baldwin suffered most.

The apples we recommend for planting to-day are: Spy, Fameuse, McIntosh; for early apples, Alexander and Duchess. This year there was a very keen demand for early apples in Great Britain. The Ben Davis and Stark are giving considerable satisfaction and are suitable to our conditions, because they produce a crop almost annually; they have a good colour, keep well and carry well, and although they command a smaller price, nevertheless the net receipts are larger than in many instances with higher priced varieties.

I brought up here a plate of Delicious apples that were grown in the neighbourhood of Brighton. This variety has not yet become well known. These apples were planted in 1912; the trees bore first two years ago, just a few apples, but this year, they bore as much as two barrels per tree.

We found as a result of our experience in 1917 and 1918 that the trees that had a good strong vigorous growth did not necessarily escape the freezing that so many suffered from that year. The Delicious tree may prove altogether lacking in hardiness, but if that does not prove to be the case, the Delicious will be planted in the Northumberland district in the next few years. The demand for the apple has been already made, on account of the advertising it has received both in the United States and Canada. I think if we produce fruit, even of that colour, there will be a ready demand. These apples were in cold storage, but those in ordinary storage are still perfectly firm, and will carry any distance; they come on after McIntosh and Fameuse have been cleared away; they are not only picked later but have a longer season, so that the period for marketing is spread over a greater number of months, and there is a better opportunity of disposing of the crop.

Q.—What is the season?

A.—The season with us is January, February and the early part of March. The season is very similar to the Spy. There are comparatively few Spies in better condition than the Delicious is just now.

I also have set out a variety of Mr. Macoun's Spy Seedlings; the tree fruited two years ago for the first time, and again this year. Unfortunately this variety does not show enough colour, but that may improve; young Spies, of course, do not show good colour as a rule. I opened a barrel of Cobalt apples the other day and found them in excellent condition, but there was not enough colour to appeal. The Cobalt is a vigorous tree, one of the most attractive trees I have seen; it bears early and heavily—about four bushels on a Cobalt tree planted in 1914, with just ordinary care—but it has this undesirable quality of lack of colour, with a very large white spot.

I would like to emphasize and draw the attention of this Association to the need of more systematic and extensive breeding of apples which will be suitable for our export trade. The Baldwin would be typical, if we only had a hardy tree. The Spy is a high class apple for the domestic market, but not for the export market for those who make a business of it.

Never in the history of apple growing have the orchards in our country been as well cared for; spraying, fertilizing, cultivating and pruning are all being carried on with greater efficiency than in the past, and I look forward to good

returns for these men. The Delicious and Jonathan are apples likely to be planted extensively, and we would like to know whether this should be done.

District No. 6: Halton and Peel.

Mr. Foster: Last year, as you all know, was an off year so far as the apple situation is concerned; the crop was below the average, and so far as Halton and Peel are concerned, the quality was below the average. There seemed to be a great many enemies to combat. In our counties there are not as many orchards being neglected as in some of the other sections; I do not think there are many being renewed or replanted, which is due probably to lack of help and the high price of the young trees. The price is a little lower now, but is still high enough. What we might expect in the future regarding planting, I do not know, but the people feel that they will take care of their trees as well as they can, and if they can produce good clean fruit, they will always have a market for it, especially if it is put up well. We have produced good fruit in some sections and have fallen down on the pack; we have not been able to hold the confidence of the buying public, and that is a very important item in any trade. If we expect to continue in the business, we will certainly have to put up the goods in a little better shape, in such shape that we will gain the confidence of the buying public so that they will come back a second and third and fourth time. We cannot afford to continue hunting up new customers all the time, but if we can hold the confidence of the people, there is a great future for the fruit business.

District No. 7: Lincoln.

Mr. Craise: The district I represent is rather small, but I think I can shout just as strong as my friend from Trenton. I claim we grow as good fruit across the lake in the Niagara district as can be grown anywhere else in the world. I care not whether in British Columbia or elsewhere. But we won't say very much for the apple business, that is, in a commercial way. While you hear the Niagara district boosted as the peach growing centre, I think a man making his livelihood from the growing of fruit is making a mistake if he does not include a certain acreage of apples. On my place of forty acres, I have an old orchard of sixty trees that have netted me more money than any other two acres I have on the farm. I have a small planting now of 105 trees that are ten years old.

I have made a little estimate in our section between the fruit grown now and ten years ago. I started with the apple. In my opinion, there are not more than 25% of the apples grown ten years ago. Pears—not more than 75% as many as there were ten years ago; the same thing is true of peaches, and if anything I am a little high on that, and you can scarcely go through the district and find one orchard that is absolutely clean, that is, free from canker, because that is the big enemy of the peach grower to-day. The men in charge of our different Departments have failed to find anything that will absolutely control the peach canker. We have to give credit to our friend, Mr. Palmer of the Vineland Experimental Farm, for the policy he is advocating at the present time with regard to pruning. He advises moderate pruning in comparison with what we did a few years ago; in most cases the canker develops where a wound has been made in the tree, so that the less wounds, the less possibility of the canker developing. That is beneficial also in the matter of producing early bearing.

In connection with grapes, I have them down at 150%, and by the prices we have been receiving in the last year, that might be raised to 200%. The growers received $85 a ton last year, while within my recollection, we drew grapes to the wine factories and received as low as $15 a ton, so there is a vast difference in the return of the vineyard.

In the matter of plums, I think we are 100% strong yet. Some orchards have gone out and some have been neglected, but there is a certain amount of new planting going on all the time. My brother and I work together; ten years ago this fall, we bought a farm of fifty acres, and in that ten years there have only been two years when the large plum orchard did not pay; one year was from crop failure, and the other was on account of the low prices, so that we have had eight successful years out of ten growing plums in that section.

With regard to cherries—I refer to sour cherries particularly—I have them down at 125%, and from our own experience they have been a very good payer. While they have not always commanded big prices, there has always been a reasonable margin left at the close of the season.

I put strawberries and raspberries in the same class, and they are about holding their own. Of course they have a great many enemies which have been developing in the last few years, and men have become discouraged. But I would say, from my own observation and experience, that the man who takes proper care of his orchard has a future before him, and need not be at all pessimistic about the fruit business—but he must take 100% care.

Simcoe District: Norfolk.

Mr. Johnson: Norfolk County is just about the same as other counties as far as the apple business was concerned last year; the fruit was certainly very spotty, which cut down our quantity a great deal. We have a good many middle-aged orchards, and during the past few years I consider that the orchards have not received the care they should have had. We have a large planting of young orchards in the county, which run about ten or twelve years old, and I believe probably next year we will show you a marked improvement in the quantity of apples and also the quality of apples shipped out of Norfolk County. We may possibly not grow the best flavoured apples—but only possibly—but since people have begun to eat with their eyes, we will do all right. Norfolk County has a market in the West, and I believe Norfolk is practically the only county that is advertising their own apples. Out West, the people know exactly that Norfolk apples mean a certain grade. We have representatives out there who advertise our apples on their letter heads, and we have always tried to keep up our grade.

We grow a good quantity of strawberries, producing last year about 500,000 baskets, around Simcoe alone.

We have tried peaches and grown them certain years, but they are not a good investment.

District No 13: Grey, Simcoe, Muskoka, Parry Sound, Nipissing, Algoma and Manitoulin Island.

Mr. Hamilton: The North part of the district will speak for itself. Around Georgian Bay section, with the exception of a few, the orchards are not being well cared for. In Clarksburg, Thornbury and a few in Meaford, the growers are spraying very well. Mr. Baker, who has a large orchard on his farm, has gone

altogether to dusting and claims he is getting good results. He has a hard orchard to look after, it being on the side of a mountain. I do not know of a single orchard that has been planted lately; there are a few trees being filled in, but practically no planting at all. A few commercial plantings set out some years ago are now just coming into bearing.

OUR SMALL FRUITS.

E. F. Palmer, Vineland Station.

"Is there anything better than the Glen Mary and Williams?" On the face of it that is an impossible question to answer, because the strawberry is very variable in its adaptations; a variety which will succeed in one locality may not be at all successful in another. Among the new varieties we have tested out at the Horticultural Experimental Station is the Portia, and we have certainly found for a jam and canning berry, this berry far excelling all of our present commercial varieties. In other new varieties, our breeding work at Vineland is comparatively recent. We have just got to the stage where we are sending out for trial half a dozen of our selected new hybrids. Three years ago we sent out fifteen or twenty to a dozen or so growers in different parts of the Province, and as a result of their test, and further testing of our own, we have cut down that number to about five or six, and these five or six we are prepared to send out to any one for testing so long as the supply of plants last. As to whether there is any better than the Glen Mary or the Williams, we cannot say yet. In four or five years from now, with your co-operation, we can make a definite recommendation. I can say for the Portia that it has stood up for years, and we certainly consider it, for the purposes of jam and canning, *the* berry.

The same holds true of raspberries. We have one very promising seedling which we are propagating very fast, but it is still too early to say whether it is better than the Cuthbert.

There are several new diseases; one or two in particular are making very heavy inroads in our present varieties of raspberries, the Cuthbert included. The Marlboro has completely failed where these diseases have come in. The only variety showing resistance is the Herbert. If the disease continues and grows worse as it seems to be doing, then the Herbert may take precedence over the Cuthbert.

There are several new varieties put out by the Geneva Station: Donborough, June and Ontario, but all of these varieties are susceptible to the raspberry mosaic and leaf curl; not only susceptible, but the stock sent out is deceased stock, so we cannot recommend growers buying these varieties at the present time. There are also two or three varieties from the Central Experimental Farm, but I will leave that to Mr. Macoun; I have reference to the Count, Sir John and Brighton.

Mr. Hodgetts: Have you tried the King Raspberry?

Mr. Palmer: We have the King growing, but it is susceptible to disease. I want to state here that the raspberry yellow and mosaic is from all indications a very serious disease, and one which may entirely revolutionize our varieties. We must get resisting varieties if the disease is to continue, as it is giving promise of continuing at the present time.

GRAPE PLANTINGS ARE INCREASING—WHAT KINDS ARE MOST PROFITABLE?

THE CHAIRMAN: Personally I have planted two varieties for commercial purposes: the Concord for a blue grape, and the Niagara. We have a certain number of other kinds, but they are much more susceptible to disease, such as rot and mildew, than these two.

MR. BUNTING: The Concord variety is in demand and is planted more largely than anything else. There is nothing better than the Concord.

THE CHAIRMAN: There is another blue grape which is being largely planted, called the Worden. It is an earlier grape than the Concord, but is very thin-skinned; and our experience is that it does not stand shipping very well, and cracks in the baskets and blows open, but it is a beautiful grape.

MR. PEART: I know of no grape better than the Campbell's Early; there just seems to be one requisite for success in that grape, and that is that you must prune it about three times as short as any other kind. It is a very heavy bearer, and hardy and will hang on from first to last.

THE CHAIRMAN: Campbell's Early is a new variety compared with the Concord; it would be another of these grapes that calls for a special market. It is the only early blue grape we have that is edible, or really satisfactory. We have had for a long while the Champion; it produced heavily, but the trouble was the growers would not wait until it was ripe—and it was bad enough when it was ripe. The Concord for the Blue, and the Niagara for the White are the best commercial grapes; any other varieties are more of a special grape and have to be sold as such.

MR. PALMER: I would like to ask whether it is advisable to plant a large acreage of Concords? They are not a shipping grape, and if the local markets will not take the increased plantings, there will be a surplus of them.

THE CHAIRMAN: It seems to me that the history of the industry so far would hardly uphold the statement that the Concord is not a good shipping grape. We have shipped Concords to the end of the earth nearly—carload after carload into the West—and they have all been satisfactory.

MR. CRAISE: During the glut of the season, the grape growers this year put fifty carloads of Concords in storage in Hamilton and held them for two weeks—some longer than that. They were dead ripe when they went in, and the report is 97% came out in as good condition as they went in, and were sold at a very much higher price, and were very satisfactory to the purchaser, so I do not think the statement that the Concord is not standing up is justified.

MR. HODGETTS: In the report of the Fruit Growers' Association for 1868, I notice that outside of the Keefer, the varieties being grown at the present time, were recommended by our Association. The same thing applies with plums with the exception of the Japanese plums which have come in since that time.

In looking over the Census Bureau report at Ottawa for last year, I find the planting in order of preference in plums: Lombard; Reine Claude, Burbank and Bradshaw. The Lombard and Reine Claude were recommended in 1868; practically the only new variety is the Burbank.

Strawberries: Senator Dunlap, followed by Williams and Glen Mary.

Raspberries: Cuthbert, followed by Herbert and King.

Grapes: Concord first, then Niagara and Worden.

Apples: In apples, the favourites were McIntosh, Snow, followed by Wealthy, Duchess, Yellow Transparent and Spy. There has not been a great deal of progress since 1868 in the varieties grown outside of the small fruits and peaches. the small fruits however, changed completely: in 1868 there were no varieties of strawberries grown that are grown to-day, and raspberries the same way. In peaches there is quite a change; outside of the two Crawfords which were recommended by our Association in 1868, none of the present peaches were being grown at that time. There seems to be very little progress in apples, pears and plums in that fifty odd years.

THE CHAIRMAN: This would seem to bear out the statement that the old varieties are holding their own, and are possibly yet the best.

MR. MACOUN: Are they perfect?

THE CHAIRMAN: Well, apparently not. The Lombard plums depend on the canners for their market. to a great extent; if the canners shut down on the Lombard Plum, and if Providence is as kind as it was in 1920, then we might as well scrap the Lombards. The Lombard is a vigorous grower, an early bearer and sure cropper once every two years. I think if we thinned them like we thin the peaches and apples, we might get a crop annually. The Lombard used to be called the people's plum, and I believe it is the people's plum yet, and it will be the people's plum from now on.

The Reine Claude plum is a good seller of high quality, but we found that some of the trees seem to have been badly grafted and do not bear, but the others that do bear are a good proposition.

The Japanese varieties are changing; some of them are fair and some not worth considering.

A MEMBER: Has Mr. Craise any new varieties in peaches?

MR. CRAISE: The only one I know that is being planted commercially is the Rochester; it is new on the American side. One orchard has been in bearing for two years in the Niagara Peninsula. It follows the same characteristics as other varieties of peaches; as the tree developes and gets a little aged, it will mature its fruit a little earlier; it is going to be a week earlier than the Yellow St. John, which will be a marked feature in the price. It is a good colour, free-stone peach. Mr. Fisher's first shipment of Rochesters sold at a very high figure. I have 400 trees growing, some three years and others two: I had as high as nineteen buds the second year they were in the ground, and the third year they produced an eleven quart basket to the tree.

EXPERIMENTAL WORK IN APPLE VARIETIES FOR THE ONTARIO SHORE.

SHALL WE PLANT DELICIOUS, JONATHANS, WINESAP, NEWTOWN, COX ORANGE AND ROME BEAUTY?

MR. RYRIE: Although I have planted five hundred odd trees of Delicious, I feel that it is somewhat in the nature of an experiment. That variety is bringing the high price, selling at $4.50 and higher in Toronto as compared with $3.00 and $3.25 for the Western McIntosh Red. It seems to me the only satisfactory varieties for boxing in Ontario would be the Spy, McIntosh, some would include the Snow, (but I consider the size is too small), and the Delicious. The Delicious

is probably the best dessert apple that the West has produced, but it has the defect of a tough skin and is somewhat mealy. I feel safe in saying we will grow a much better Delicious apple than the West, that is, if we can get the colour. In every way it has the qualities for box packing, and for that reason I have ventured with a small planting. I would like to know if anyone else, besides Mr. Sirett, who prophesies in Northumberland and Durham there will be large plantings, has had experience with the Delicious apple.

Mr. Palmer: We have tried the Delicious for several years, and we are not prepared yet to recommend it without a qualification. The Delicious certainly does command a big price, but the reason is that it is a light yielder. In the second place, the Delicious is inclined to grow "punky" at the centre while the apple looks normal from the outside. While that may be alright from the producers' standpoint, yet eventually when the consumer is not satisfied, he won't come back. It is entirely a question of handling the apple. The tree is also slow coming into bearing, but with lighter pruning that fault can be practically overcome.

There is still a more serious consideration, and that is the matter of hardiness. We do not know yet what the hardiness of the Delicious is.

Q.—What time of the year do they grow punky in the centre?

A.—It is merely a question of holding them too long in the season. Grown in Vineland and in the Niagara Peninsula, they will grow punky by Christmas; that is, they did this past year.

Mr. Neilson: During the past two years I have had an opportunity of watching some of the varieties enumerated in this list. With regard to the Delicious we have contradictory reports. One grower on St. Joseph's Island informed us that he had grown Delicious with a fair degree of success. He is of the opinion that up to date the Delicious cannot be recommended without qualifications. I wrote to Prof. Lane of the Iowa State College and asked him his opinion about the Delicious—most of you know the Delicious originated in the State of Iowa—and although it originated there they cannot recommend it generally over the State as yet. In the State of Michigan it is not recommended by the authorities. In Ontario I know of a few cases where it has been grown. Mr. Palmer has said it has some defects, and perhaps the greatest is lack of hardiness, which has been shown not so much in Ontario but in the State of Iowa where the latitude is about the same, and the climate similar. It kills back, and is subject to sunscald to a slight extent. From my general knowledge of the Delicious, I would say we should go a little slower in planting it than in planting some of the other varieties. We have some excellent varieties in this country, and we had better confine our plantings to the varieties we know are satisfactory rather than take a chance on extensive planting of these comparatively unknown varieties.

The Jonathan, as we all know, is a good apple, with excellent qualities, but it is not entirely ideal. It is not one of the hardiest varieties, and in Ontario it is inclined to grow rather small. Mr. Sheppard, who has quite a large orchard would not recommend the Jonathan except where the best kind of soil can be obtained and the best cultural methods followed. I am of the opinion it would not be well to plant this variety outside of the Lake Erie Counties and the Niagara Section, and perhaps in the immediate vicinity of Lake Ontario.

The Winesap is not hardy enough for our climatic conditions. It is a very good apple in some parts of the United States; but is somewhat lacking in hardiness here, according to the results of my work.

The Newtown is an excellent variety, and more promising than the others for hardiness, but here again, I would not want to recommend that except in the warmer districts of the Province.

The Cox Orange I would not recommend at all. While the British like it very well, we find it is a light bearer, and it is inclined to be small, and is subject to cracking, and I certainly would not recommend it, with my present knowledge of it.

Rome Beauty is one of the most promising on the list. It is hardier than any of these others, and it is a very beautiful apple with a good flavour.

I would like to make this general recommendation that you had better go slow in planting most of these varieties. We already have some excellent varieties, and why not stick to them? Because a variety does well in Illinois or Iowa, does not necessarily mean it will do well here, nor does it mean that the varieties that do well here will do well in these States. As a matter of fact, our Spy and Greening and Baldwin which have done so well in Ontario are not satisfactory in the middle Western States. If we do plant these new varieties, just plant them in small quantities until we know more about them.

Mr. Hodgetts: A number of letters have appeared in *The Canadian Horticulturist* on this matter. I do not agree with Mr. Neilson in reference to going slow on a lot of our new varieties. Ontario has gone too slow in planting a lot of the new varieties, and our Western friends are getting the cream of the prices. At the present time, the Delicious and Jonathan are beating us out in our home market because they are good box apples. There are faults with all the apples we grow at the present time. Take the Spy, recommended as about the best for Ontario, it is hard to grow a uniform lot of apples necessary for boxing on the orchard year after year. The McIntosh is pretty close to a good box apple, and if we had not taken the recommendation of our Fruit Committee forty or fifty years ago, we would not have had carloads of McIntosh coming in here from the West. I think if we had speculated a little more and taken advantage of the advertising some of the States and the other Provinces were doing we would have been farther ahead.

Let us try these varieties out. It would not do the large grower any harm to plant 100 trees of these varieties and we will soon find out about the hardiness. Let us speculate a little more on some of these newer varieties. If I had room I would plant 100 Delicious trees, and give it a trial. Mr. Sirett showed this morning some Delicious apples that were grown at Brighton, and grown to perfection down there. It may be a winter will come along and clean them out, but in the winter of 1917-1918, a lot of our best varieties were cleaned out, including the Spy. At our Show a year ago we had Delicious from the Western part of the Province, and Mr. Maycock brought Jonathans to our Convention for two years in succession which are good specimens of the variety.

Mr. Neilson talks about Cox Orange running too small. If we grow the Cox Orange for the British market, we want them small, and they are willing to pay 100s. a case for Cox Orange, where they would not go higher than 25s. for McIntosh. If they want these apples and we can grow them, let us grow them and send them to them. If we can make three times the money as on other varieties, let us take a chance and speculate on some of the newer varieties.

Mr. Neilson: I hope the audience did not understand me to say that I would not plant any of these apples, but what I wanted to say is this: You need not rush off and plant these varieties extensively until we know more about them. I will admit that the Delicious apples grown down at Brighton are fine looking; I have not had a chance to taste them yet, but I would like to know how these varieties will behave in a trying season such as we had in 1917-1918, especially after bearing a heavy crop. The observation we have made in the middle Western States is that they went out wherever there was a heavy crop—and their conditions are no worse than here, even though our climate is modified by the Lake. It is all right to plant these varieties for a trial, but when it comes to speculating with a lot of trees, it is a risky proposition, and again I would say, I would just urge you to be cautious.

Mr. Hodgetts: What varieties would you recommend for the Lake Ontario shore?

Mr. Neilson: I could not recommend, with my present knowledge, any other varieties than they are growing there—McIntosh and Snow—you are safe on them. That is just my opinion. I do not want to force my opinion on any members here, but it is based on a rather wide study of the behaviour of some of these varieties in many parts of the United States and some parts of Canada. It is all right to grow trees of good quality fruit and beautiful colour, but there is not much use in growing trees that will not stand our climate under bad conditions.

Prof. Caesar: It seems to me that Mr. Neilson's remarks may be misunderstood. He speaks in general terms of winter injury; I know he referred in a way to particular districts, but in the Province as a whole, there is the greatest degree of variation in regard to winter injury. In the Niagara District you can plant almost any of our varieties without fear of winter injury. You can do the same thing all along by Burlington and around Toronto. The Baldwin is quite hardy for all these districts, and I should say the Baldwin is probably the most tender of all our commercial varieties. When you get farther east, it is a different problem. Take an apple like the Winesap, which is an excellent apple, I should think it would be very unwise to condemn that over the Province as a whole. Growers should be very cautious with it in the colder parts of the Province, from Toronto on east and farther north than here, but for the Niagara District, which is so temperate you can grow peaches, it is an entirely different problem. Over in the Niagara District, we can grow several of these new varieties that have excellent colour and excellent packing qualities.

It seems to me if the Delicious apple can be grown on St. Joseph's Island, they could be grown any place. But you have to see where they were grown there: they are fairly far fom the water, but on sandy soil in which the roots get wonderful protection. But when you cross to Ottawa and try to grow most of our apples on cold land, the result is they die out. On sandy land our hardier varieties will stand the climate. That is one of the recommendations in regard to hardiness.

While Iowa may not be any colder than Ontario, one great principle in connection with winter injury is this: constant extremes of temperature are one of the most dangerous of all conditions for producing winter injury. Iowa is in the central plain where you get a great sweep of cold spells, when the thermometer may go down very low suddenly. That is a most dangerous condition for producing certain kinds of winter injury. I doubt if we have any place in On-

tario where we are subject to these very sudden and extreme changes of temperature. I think it is a local matter, and each of these points should be decided for the special locality in which the grower lives.

MR. BAXTER: It seems to to me we are now in a very serious state with respect to our apple industry in Canada. This is a very important question, and we should also profit by our past experience. Certain varieties were planted out in the North-Western States and British Columbia that did not do as well as in Ontario, which means that the growers in the West who planted these varieties are under a handicap as far as marketing is concerned, in coming in competition with the Province of Ontario, so I think we have come to the point where each Province and certain districts within the Province, should specialize with the variety that has proven to be of good commercial value, and that will do best in that locality.

I heartily endorse what our Secretary has said, that we should step out and experiment, as Mr. Ryrie is doing, by planting a few trees and finding out just what they will do before we embark on any extensive planting of these varieties that are now bringing maximum prices, such as the Delicious. The Delicious we know is probably the best advertised apple we have.

MR. MACOUN: I would like to add a few words to help the discussion on this subject, on account of our great experience on varieties at Ottawa and the tests in regard to hardiness there. I was interested in what the secretary said with regard to the fact that there are very few new varieties of apples recommended to-day over what the Association recommended away back in 1868. There are a few good reasons for that, the principal reason being that the varieties of apples we have to-day have nearly all been the result of a test of about 300 years; that is, when the settlements began in America in the seventeenth century, people began planting apple seeds, and before very long these trees came into bearing. Down through the past 300 years people have sifted out the best of these seedlings, and the principal apples that we grow to-day—the Northern Spy, the Rhode Island, the Greening, the Baldwin, and so on—were originated during the past 300 years. The Baldwin, Rhode Island Greening and Newtown Pippin were originated in the eighteenth century, and the Spy and Wagener were originated in the early part of the seventeenth century. During the past thirty or forty or fifty years, we have a few new varieties which are taking a very high place to-day. Take, for instance, the Wealthy apple: that apple was only introduced to Canada in the seventies of the last century, and the McIntosh I think was recommended about 1879, so those apples are of comparatively recent origin. We have an odd new variety coming to the front, but if we do not get rapid change of variety, I do not think we should be disappointed. It is only during comparatively recent years that any systematic effort was made in regard to the origination of new varieties, that is, by crossing varieties so as to combine in a new sort, the good qualities of both. We have at the Experimental Farm crossed the Delicious and the McIntosh in order to get a hardier apple than the Delicious, and perhaps a longer keeping apple than the McIntosh. We have a cross between the McIntosh and the Cox Orange; between the McIntosh and Wealthy, and perhaps 100 different combinations of apples, and we hope to get some day a variety or varieties that will take the place of what we have to-day.

I will give you an idea of the length of time it takes when you start to systematically originate a new variety and popularize it. From the sowing of the seed

of the apple, (after you have made the cross from the orchard in the spring and you plant the seed in the fall), to the planting of the seedling it takes three years. From the planting of the seedling tree to the time of bearing, another five years, at the very least, and sometimes ten or twelve years. From the time of bearing to confirming the characteristics of the fruit, another five years. You cannot say the first year the tree fruits that such fruit is going to be characteristic of the variety; you might have to wait for several seasons, because you may not have a particularly favourable season, and the next year it may not bear at all. So it takes about five years to find out whether that variety is going to be really a promising one or not. Then you start to propagate it, and from the propagation of that tree, another three years. Now you have your propagated tree in the orchard, and from the planting of the propagated tree in the orchard to the fruit is another six years, that is, your grafted tree is planted out in the orchard. Then you ask the nurseryman to come and take a look at your new product and see whether it is going to be popular or not, and if he says, "We will multiply that," it will take him three years to have a stock for sale. Then a fruit grower comes along and orders that from the nurseryman. And from the time of the sale until the tree is in full bearing is another ten years. Now you have the fruit, perhaps in fairly large quantities, offered for sale, but before the consumer knows anything much about that variety, unless it is highly advertised as the Delicious was, it will take five years at least. If you add all things together, you have forty years—and we have been at the work at Ottawa for twenty-four years, so we have sixteen years yet to work on, before any of our varieties will be a popular commercial sort. I venture to make a prophecy that our variety, the Melba, will be a popular commercial sort within the next fifteen or sixteen years. It is very similar to the McIntosh in appearance and quality. We have a lot of very promising seedlings of the McIntosh type that are in season earlier than the McIntosh. When I tell you that twenty-five years ago we had only five varieties of long keeping apples that we could say were hardy, and that we have to-day over 200 long keeping varieties that stood the test of 1917-1918, you can see we have made a great deal of progress in that time, but it will take many years more to sift them out.

Just a word about the Delicious apple. It is my privilege to go to British Columbia every summer, and I find it is the most popular apple in the Okanagan District of British Columbia, because there is a shortage of them. It is hardier than the Jonathan apple, which is not being planted at all. The Jonathan was badly injured a few winters ago, whereas the Delicious stood the test, and the growers are banking on the Delicious as their most popular and most paying apple. But at Ottawa it has not proved hardy, and Mr. Neilson pointed out it is not hardy in the State of Iowa, so I think it is just as well to plant it with a fair amount of caution, although if a man loses 100 trees, it would not be a great loss.

A MEMBER: I have a few Delicious trees in Northumberland County. The oldest are ten years, but they stood that hard winter well as young trees, and they have been bearing for three years and are very prolific. We have yet to find any punkiness in the centre, and they carry splendidly. We consider they will grow with us and do fine.

OUR SPRAYING.

Prof. L. Caesar, O.A.C. Guelph.

I want to speak to you about the value of spraying as a means of securing good crops, not necessarily this year or next year but every year, and as a means of making apple orchards, particularly, profitable. I am not going to tell you how to spray or what sprays to put on. Mr. Ross will do that for you. I believe the biggest need of the fruit industry to-day is better marketing; that is what is holding everything else back. Every man should have this thought in his mind: that some day we must get all the fruit growers into one big organization. I am not at all disappointed at so many people having dropped out of the fruit growing business; perhaps in the long run it may be a good thing. The best of the men are in, and in every district we have some man who is a good leader, and the other growers will follow that man. But we have got to get the marketing end before we can talk spraying or anything else, because you can talk to a man about how to make his orchard clean, but what good is it to him if he cannot sell his apples, and we have to have an assured market to get the results.

The first proposition I have to give you in regard to spraying is this: Spraying helps to keep your trees healthy. If you want a profitable orchard you must have healthy trees. Supposing you have trees well adapted to your district, spraying will help to keep your trees healthy. That does not mean merely clean crops; spraying does something else besides keeping the crops clean. In the first place, spraying will remove from the bark in the trunk of the tree certain insects that are extracting the life of that tree. The San Jose scale alone has destroyed over 2,000,000 trees in this Province, and perhaps more than that. We have all over the Province, the oyster shell scale, and I can take you out around Mimico and show you orchard after orchard that is dying as a result of oyster shell scale. As a rule, this scale does not kill, but it is killing there. In Cobourg and Port Hope, there are fine orchards nearly dead with oyster shell scale. The point is this: when you get certain insects on the bark of your tree and on the trunk, the main branches and the twigs of your tree, extracting the food out of that tree, you cannot help but have a weakened tree, and you cannot expect a profitable orchard.

There is another way in which spraying gives you healthy trees. If the trees are not sprayed, in 50% of the years, the foliage is badly injured by insects or by disease. What does it mean when the foliage, particularly in the early part of the season, is injured in this way? Coming in the early part of the season (if the insects came in the latter part we would not mind it very much), they spoil the orchard for the whole year. They destroy the foliage and do an immense amount of damage to the tree in this way: the leaves of the tree are to a large extent the part of the tree that feeds the rest. The food substances—most of them—come up from the ground in a raw condition as liquid, or as substances taken in out of the air, and the two of these substances unite together. The substances taken out of the air and the raw material from the liquid are turned over in the leaves, and a great part of the good of your tree is made in these leaves, but it cannot be made unless you have good healthy foliage. A bad leaf cannot manufacture food: a leaf that has half of its surface eaten out by insects cannot manufacture the amount of food it should, and therefore, the injuries from these diseases and insects are lessening the vigour of your trees.

You can keep these sucking insects, then, off the trunks of your trees, and off the main branches and the twigs by spraying. You can protect the foliage against the insects that are eating the leaves by spraying. Spraying helps to keep good healthy trees, and therefore, is an immense factor in connection with the profit of the orchard.

The next point I want to impress upon you is this: Spraying will help to produce annual crops. One of the great things now being advocated is pruning to produce annual crops—thinning to produce annual crops. You may do your pruning and your cultivating and your fertilizing, and if you do not spray, what happens if it is a bad year for apple scab? All of these things go for nothing simply because the scab will get on your leaves and will destroy them, and no matter what your fertilizer is, the tree cannot be fed. If you have not got healthy foliage, you cannot expect to have these other things work to their best advantage. Therefore, the spraying of your orchard is going to help your pruning, your cultivation and your fertilizing.

I said spraying will help to give you annual crops. One of the biggest factors in procuring annual crops is to have good vigorous trees and healthy foliage. You can go through the country and pick out the orchards which will be gone in five years, or the orchards which will bear this summer. How? The orchard that has miserable, scaby foliage is not going to give you a crop next year. I know a man in Picton, who tells me that only once has he had a failure of the crop, and the reason this man has a better crop than his neighbour is because his foliage is healthy. The tree must be in good vigour to produce annual crops: the fruit buds should set early in the season, and the tree must have stored up in itself a lot of food.

The third thing about spraying is that it gives you clean fruit. We know that really good spraying will give you clean apples. This, of course, must be good spraying. What does clean fruit mean? Does not it mean almost everything? Does not it mean a tremendous amount to have clean fruit in your orchard? If you only have 50% clean apples, you are not going to have anything like the profit as if you had 95% or 98% clean, and that is not too high. Every man should aim at, at least 95%. I know a number of men, in this audience, who had last year 99% absolutely clean. Take the orchard of Mr. Phillips, at Cobourg; you could hardly find a scab or an insect in his orchard. And the orchard of Mr. Sirett, of Mr. Watson, and others, the Government orchard at Simcoe last year and the year before; scarcely any apples not clean, scarcely any insects or any disease. It must be a great encouragement to a man to look at his orchard and find beautiful clean fruit, and it means a lot to him on the market. When a buyer comes into an orchard and sees it free from disease and insects, he wants to come back to that place; it gives the orchard a reputation. Clean fruit is an encouragement to yourself, to the buyer and to the foreign markets.

As a result of spraying you get healthy trees, and vigorous foliage, and from that you get good annual crops—one of the biggest factors—and then you get a clean crop, which gives you the full benefit of market conditions. If you are going into spraying, make a study of it and try to get the best you can; and the man who makes a study of it, gets rather fond of spraying and he enjoys it. It is always a problem, and he wants to do it so that he knows that tree is well sprayed. Spraying means thorough spraying; you cannot call good spraying, one application: you cannot be sure that one spraying will give you good clean fruit. Two

sprayings won't give you as good fruit, but three sprayings sometimes will. I my self recommend four; Mr. Ross recommends three.

Another thing about good spraying is this: It cannot be done at random in regard to time. It is just as important to spray at the right time as to spray well at any one time. Some of us overlook that, and say "I am too busy to-day; I will put that off until next week or three or four days," but that means the whole loss of your efforts. We must fit spraying in with the time of blossoms and with the setting of the fruit, and we have no latitude at all or very little. We have to put on one spray just before the blossoms come, and unless you can get it on as near as possible to that time, you may fail, and unless you put it on as soon as possible after the blossoms drop you may fail. Spraying means not only doing it well and making at least three applications, but putting it on at a certain time. You have to follow for success, the times laid down in the spraying calendars; they are the results of years of experience, not of one man, but of many men.

Then again, you cannot spray well unless you have a good outfit, and you have to keep it in good shape. You lose courage, you become impatient, and you will let the spraying go if your outfit is not in good shape, so keep it in good shape, and that will help you and encourage you. As to mixtures, I would not try a material unless you are sure of it. The old mixtures recommended for our province are quite safe for our province; they may not work in every province, but we know about our own.

These are the main points I would urge upon you in connection with spraying. I want you to get the idea that good spraying will pay you in many ways many fold each year, and that means that your little trees should be sprayed and the trees that are not bearing as well as the trees that are.

OUR SPRAYING

W. A. Ross, Vineland Station.

I should like first of all to discuss briefly the spraying of apples and pears, and then I may have a word to say about dusting. Some men grumble about the amount of spraying they have to do, but after all, there is no fruit growing section on the North American Continent where growers have to do less spraying than right here in Ontario. In some places it is necessary to spray apple trees four, five, six or more times, but in Ontario three applications as a rule are sufficient to give us excellent commercial control of most of the common orchard pests. In some years and in some orchards, for example in orchards infested with apple maggot, one or more extra applications are necessary, but in the average season and in orchards free of such pests, three applications are sufficient.

These three sprays should be put on every year. This cannot be over emphasized. A grower cannot afford in actual dollars and cents to leave out one of them. Each should be put on very thoroughly and each should be put on at the right time. In working among orchardists nothing has impressed itself more on my mind than this: that few growers use sufficient material to do a thorough job; few growers spray thoroughly enough.

The first application should be put on about the time the buds are bursting. This spray is applied primarily for the control of scale insects and blister mite, but it is also of great value in controlling black rot canker and apple scab.

What material should we use for this application? In the scale infested sections of the Niagara District, use lime sulphur, 1-7; in Eastern Ontario lime sulphur, 1-9. If you are satisfied there is no scale or blister mite, you can use lime sulphur 1-20, or Bordeaux mixture. In orchards subject to injury from aphids, which are the small soft-bodied sucking lice you find clustering on the leaves, and sometimes on the fruit, Black Leaf 40, at the rate of three-eighths of a pint to 40 gallons, should be added to this first spray; and the spray should be applied with great thoroughness so that you will hit practically all the newly hatched lice which are found clustering on the buds at this time of year.

The second spray should be put on just before the blossoms, or in other words at the time the blossom buds are showing pink. This application controls bud moth, case bearers, green fruit worm, and some other biting insects, but it is put on chiefly for the control of apple scab.

The third application should be put on immediately after nearly all the the petals have fallen. This spray controls scab and codling moth. In applying it, care must be taken to wet all the fruit so that some of the poison will be lodged in the calyx cups. Most of the codling worms enter the fruit through the calyx end and on feeding on the poisoned tissues they succumb.

There is only the one spray material to use for this application, and that is lime sulphur 1-40 with an arsenical—arsenate of lime or arsenate of lead. Bordeaux applied at this stage may cause very serious russetting. The last time we used bordeaux mixture for this spray—in 1918—70% of the McIntosh apples, 38% Jonathon and 27% Wealthy were badly russetted, and the owner of the orchard considered that the bordeaux spray had injured his apples almost as much as a severe attack of apple scab.

If June is very wet, it is advisable to make a fourth application on varieties, such as McIntosh and Snow, which are very subject to scab. But in the average season a fourth spray is unnecessary, according to the experiments we conducted in various parts of the province. For the fourth spray, whenever it is necessary, I would use lime-sulphur 1-40.

In connection with the control of codling moth, it is sometimes necessary, in order to prevent serious "side-worm" injury, to make a special application of arsenate of lead 2 lbs. of powder or 3-4 lbs. paste. This spray should be put on three or four weeks after the blossoms fall; that is about the time the codling moth eggs begin to hatch. However, after all the application, which is by far the most important in preventing "side-worm" injury, is the third or codling moth spray.

Only too many growers do not make this application and then wonder why they cannot control scab. How can they expect to control scab when they leave the foliage and blossoms, which later on develop into the fruit, unprotected at this critical stage when so much scab infection is liable to take place? If the base of the calyces becomes infected at this stage, no amount of later spraying will produce clean fruit.

What spray materials should be used? Two mixtures are generally recommended:

(1) Lime sulphur 1-40 and calcium arsenate 1 lb. per 40 gallons or arsenate of lead 1½ lbs. powder or 3 lbs. paste per 40 gallons. If calcium arsenate is used, hydrated lime, 3 lbs. per 40 gallons, should be added to the lime sulphur.

(2) Bordeaux mixture 3-10-40 and the same amount of calcium arsenate or arsenate of lead as in (1).

Mr. Johnson, of Simcoe, is a great advocate of bordeaux mixture, but personally, I prefer the lime sulphur for this application, because the comparative orchard spraying experiments which the Entomological Branch have been conducting during the past four years have shown: (1) That bordeaux mixture used at this time will on some varieties, and under certain conditions, cause sufficient russetting to detract from the appearance of the fruit. (2) That under some conditions, bordeaux mixture will deaden the color of the fruit—rob it of lustre. I have noticed this on several occasions, but it was most marked in a Collingwood orchard where we carried on some experiments in 1920. The Greening, Snow and Ben Davis apples, sprayed with lime sulphur, were very much superior in finish to those sprayed with bordeaux. Even the pickers were struck by the difference, and were curious to know why the apples in the one block were so superior in appearance to those in the other. I am aware that bordeaux mixture is slightly better than lime sulphur as a fungicide, although as a matter of fact, in our own work it has always controlled apple scab every bit as well as bordeaux. I am also aware that on some varieties, notably Duchess, foliage sprayed with bordeaux may be more vigorous that that sprayed with lime sulphur. However, I am satisfied that these two advantages are more than offset by the disadvantage bordeaux mixture has of robbing some varieties of a superior complexion.

Q.—Do you use liquid sulphur or soluble?

A.—Lime sulphur. Soluble sulphur is all right as a dormant spray, but I do not care for it as a summer application, because it is not as good a fungicide as the lime sulphur; in fact, I know the Niagara Spray Company are not recommending it for summer sprays.

In most pear orchards in Ontario, two application are sufficient: the first one put on just before or as the buds are bursting—lime sulphur 1-7 or 1-9. This is for the control of scale insects and blister mite. In orchards not troubled with these insects, I can see no object in making this application. The second application should be put on after the blossoms drop. For this I would use lime sulphur 1-40 or 1-50, and Arsenate of Lead, 1½ lbs. powder, or twice that amount of paste, or one lb. of Arsenate of Lime with hydrate of lime added—3 lbs. to every barrel of spray.

Q.—Do you consider calcium arsenate is as good as lead?

A.—Yes, I do, provided you add the lime. I have been using arsenate of lime or calcium arsenate since 1914, and I have never had any serious burning, but I saw some orchards scorched pretty badly by spraying with lime-sulphur and calcium arsenate without the lime, but you can prevent injury altogether by adding the lime. I have noticed that pears seem to be very easily burned at the stage after the blossoms drop; but by adding lime to the lime sulphur before putting in the arsenate of lime that can be overcome.

Prof. Caesar: I used calcium arsenic one year and had no burning?

Mr. Ross: I have used it alone too and had no burning but other growers had. But injury can be eliminated by adding the lime. Calcium arsenate is considerably cheaper than the arsenate of lead. As far as I am concerned, I would use it altogether on apples and pears instead of the lead, but it cannot be used with safety in combination with lime sulphur on stone fruits.

If you have varieties of pears which are subject to scab, such as Flemish Beauty, it is necessary to spray four times. For the last three applications,

I would use lime sulphur 1-40. The first application is the dormant spray; the second should be put on just before the blossoms and the third just after the blossoms, and the fourth ten to fourteen days later.

What I want to speak about chiefly, in connection with the spraying of pears, is the control of the pear psylla. I have found this pest as far East as Trenton, and it most probably occurs in all sections where pears are grown, but so far it has only been troublesome in the warmer parts of the province. At Burlington and in parts of the Niagara district, it is very injurious and, without doubt, is one of the worst pests the grower has to contend with. Personally, after studying the psylla for the past four or five years, and after observing it at work in New York State, I am of the opinion that with the planting out of more pears in the warmer sections, this pest will become increasingly important, and that its control will be one of the biggest problems confronting the pear grower. Burlington men have said that the psylla is more troublesome that fire-blight.

How is the psylla controlled? Our experiments have shown that by modifying the spray schedule as follows the psylla can be reduced to such insignificant numbers that it will cause no appreciable injury.

The first application should be put off until shortly before the trees bloom. The trees should then be very thoroughly drenched with lime sulphur 1-7 if there is any scale present, if there is no scale, lime sulphur 1-9 and 5 or 10 lbs. hydrated lime per barrel.

For the second application, that is the codling moth spray, ½ pint of nicotine sulphate or Black Leaf 40 and 5 lbs. hydrated lime should be added to every barrel of spray mixture. In mixing up a tank for this application, the procedure should be as follows:

Fill the tank with water then, with the agitator running, add the lime sulphur, then the lime, then the arsenical, and finally the nicotine. This spray must also be applied with great care, so as to thoroughly wet all parts of the trees. Personally, I do not know of any pest which calls for more thorough spraying than the pear psylla.

In large plantings which cannot be sprayed in about four days' time, it is advisable to spray part of the orchard in the fall or early spring with a miscible oil such as Scalecide in order to destroy the overwintering adults. This spraying should be done in November, December, March or early April, during a period of warm weather. As shown by an experiment in a Burlington orchard last year, one very thorough application of Scalecide put on at the right time will certainly give splendid results in controlling the pear psylla.

I want to say a word or two about the somewhat controversial subject of dusting. For the sake of convenience orchard pests can be divided into three categories. In the first category are the sucking insects which are controlled by means of contact sprays; in the second, biting insects, controlled by means of poisons; and in the third injurious fungi controlled by spraying with fungicides. What is the present status of dusting in connection with the control of these categories? For the control of sucking insects orchard contact dusts are still wholly in the experimental stage. We have tested some contact dusts which appear very promising, but I am sorry to say they are a little too costly to be of any use, at least in Ontario, for controlling our orchard pests; however, I hope in the future we will be able to get these contact dusts a little lower in price. I expect this year to do a considerable amount of work with some more contact dusts, but

the fact remains that contact dusts from our point of view are still wholly in the experimental stage.

Orchard dusts have on the whole proved to be as effective as spraying mixtures for the control of biting insects. That is the case at least in Canada and the northern states. In the southern states and in a state like Colorado where they have several broods of codling moth these orchard dusts have been quite ineffective.

In regard to the control of fungus diseases, an examination of the experiments, which have been conducted in the different parts of the North American Continent, shows a very great variation in the results secured by different investigators in the same year, and by the same investigators in different years. We notice the same thing in the work done by growers. Some years they have had excellent results; in other years the dusts have fallen down badly, particularly in the control of apple scab. How are we to account for these differences? As I see it they can be accounted for by the varying weather conditions under which the experiments have been conducted. It is a fact, which no one who has investigated the matter would deny, that orchard dusts are more easily washed off than liquid materials. For this reason, in seasons when there is very much rain, dust mixtures will not protect the trees over as long a period from injurious fungi as liquid sprays will. Orchard dusts I am satisfied, are very efficient fungicides as long as they are on the trees, but of course when they are washed off you can scarcely expect them to function.

I wish to refer for a moment to some experiments which Prof. Caesar and I conducted last year with liquid sprays and orchard dusts in the Newcastle District.

Last year in most parts of Ontario we had possibly the worst infection of apple scab that we have had for many years back. We had two apple orchards and divided each orchard into four blocks,. We tested two dusts (1) copper arsenic dust, composed of copper sulphate or blue stone, hydrated lime and arsenate of lime; and (2) 90-10 sulphur and arsenate of lead dust. We also tested liquid sprays of Bordeaux mixture and lime sulphur. We put on all three regular applications: (1) after the buds had burst, (2) before the blossoms and (3) after the blossoms, and in all cases the work was done very thoroughly.

As to results: I will not refer to the results secured in controlling biting insects, because in all cases we had satisfactory codling moth control; I wish to refer only to the control of scab and sooty fungus or blotch.

On McIntosh: Where we used copper arsenate we had 92% scab; where we used sulphur and lead dust we had 76% scab; with a fraction in both cases. Where we used liquid spray 7% scab.

On Stark: Which is very subject to scab, where we used copper arsenic dust we had 82% scab; sulphur and lead dust 74% scab. Where we used the liquid, which was lime sulphur, 2% scab, practically nothing at all.

On Spy: The differences were not at all marked; copper arsenic 11%, sulphur and lead dust, 13%, liquid 3%.

In regard to the sooty fungus, we had not any on McIntosh or Stark, or the apples were so scabby we did not notice any. On the Spy where we used copper arsenic we had 10.47% sooty fungus, sulphur and lead dust 2.7%, liquid spray four-tenths of 1%.

Q.—What was the date you applied the material for sooty fungus?

A.—We made no special application for sooty fungus at all. We found in the two orchards, that the three regular applications of liquid sprays controlled the disease. I suppose it would be the codling moth spray which would be most effective. We made no special application but where it is necessary to make a special application for sooty fungus it should be put on about the first or second week of August. Of course in controlling sooty fungus the first thing you want to do is to improve the air drainage by opening up the trees and by getting rid of wind breaks which make the orchard conditions so favourable for the development of this disease. Where you have good air circulation, as a general rule, sooty fungus won't trouble you at all.

Q.—Do you think those early sprays have an effect on sooty fungus? A.—I am sure they have. Where we used liquid sprays we only had four-tenths of 1%, and the trees just got the three regular applications. The conditions in the block which was sprayed were really more favourable for sooty fungus than were the conditions in the dusted blocks, because the liquid block happened to be in the centre of the orchard.

Q.—What spray would you use for sooty fungus? A.—Lime sulphur one to forty.

Q.—Do you use one to forty for the summer spray?

A.—Yes.

Q.—Never one to thirty-five?

A.—I have been using one to forty right along and it has always given me good results; you can use one to thirty-five for the second spray.

Q.—Would not you be apt to burn the foliage if you used one to thirty-five for the second spray?

A.—Not to any appreciable extent.

In the case of the McIntosh and Stark apples the scab on the trees dusted with copper dust was of a more severe type than that on the trees dusted with sulphur, and in the case of the apples that were sprayed, many of the scab spots were so small that the average grower would never have noticed them.

Dusting not only fell down badly in the Newcastle district but it failed to control scab in all sections of Ontario where scab infection was very severe. I spent considerable time last year going around examining the orchards and in all cases I noticed where the trees were very thoroughly sprayed with the three regular applications there was very little scab; whereas where the trees had been dusted they were badly infected with scab.

There was one orchard I came across in Norfolk County that proved to be rather interesting—a forty acre orchard of Baldwins, Spys and Greenings. The Greenings were sprayed three times; the Baldwins and Spys were dusted four times; for the first, second and fourth applications copper arsenic dust was used, and for the third or codling moth spray, sulphur dust was applied. The Greenings had not any more than 2% scab. The Spys had in the neighbourhood of 75% scab. The Baldwin is not at all susceptible to scab but it showed 50% scab.

It is only fair to state that in other sections, for instance in the Brighton and Trenton district, orchard dust gave very good results but there was a reason for that. Apple scab infection was comparatively slight in that district. I believe that was also the case in some other sections which I was not in.

My ideas about the status of dusting can be summed up in a few words. Dusting is not a substitute for spraying but it is an extremely useful adjunct to

spraying. The owner of a large orchard who for various reasons cannot get over all his trees with liquid sprays can use dust to advantage, especially on the varieties not very subject to scab. Then again dusting has proved to be of great value for special purposes; it has proved to be of value in the Niagara District in controlling grape mildew and in preventing the development of brown rot on ripening cherries and plums, and in controlling strawberry weevil.

Q.—What about the grape leaf hopper?

A.—We have been trying some contact dusts on that pest but our work so far is still in the experimental stage. In your case I would advise you to stick to the liquid, you can control the grape leaf hopper by spraying with Black Leaf 40 at the rate of half a pint to one hundred gallons. The time to put the application on in your section would be about the second week in July; thoroughly drench the undersurface of the leaf and you will control the hopper.

Prof. Caesar: Most of them are in the immature state and you have to get them before they grow wings.

Mr. Ross: We had very striking results in controlling the hopper in one of Mr. J. W. Smith's graperies. We thoroughly drenched the vines about July 9th, and from then on to the end of the season the foliage remained green in this particular grapery. Whereas in neighbouring graperies the foliage was brown and rusty in appearance.

To get back to dusting, the only advice entomologists can give to growers is this: Spray by all means if you can possibly do it. But if for various reasons you cannot spray all of your trees by all means use dust, especially on the varieties not very susceptible to scab. Growers who depend on dust for controlling their orchard pests will have to be prepared to put on extra applications, timed according to the weather. Under Ontario conditions the control of apple scab seems to be largely a question of keeping the leaves and blossoms coated with a fungicide from the bursting of the buds up to two weeks or so after the blossoms drop. Three applications of liquid sprays will generally protect the trees over this period, but in the case of dusts more applications may be necessary, depending on the weather. For these extra applications sulphur dust without a poison should be of use.

In conclusion I wish to state that although I am fully aware of the present limitations of dusting as a method of controlling orchard pests, at the same time I recognize that it has great possibilities. The big advantage it has over spraying, namely speed of application and economy of labour, make me hope that further improvements in dusting machinery and in dust mixtures will make dusting as reliable as spraying.

Q.—Not to mention the price?

A.—That will come down too.

Q.—Is the composition of the dust similar to the composition of the liquid with the exception of the water?

A.—It is not.

Q.—Could not it be made that way?

A.—I do not know whether that could be done or not. In the case of copper arsenic dust the composition is quite similar to Bordeaux mixture, but unlike Bordeaux mixture the dust has the great weakness that it is washed off too easily. Some will tell you it will form a film of Bordeaux mixture on the leaf. I have used it since 1915 and I have never yet found that film of Bordeaux on

the leaf. If heavy rains come along they will wash the dust off. What we want from our manufacturers of dust materials is dust which will adhere to the leaves and stand a little rain.

Q.—What has been your experience with dusting plums and cherries for the rot?

A.—As I said before, dusting plums with sulphur is undoubtedly of great value in preventing the development of brown rot. The same thing holds good in the case of sweet cherries.

Q.—What preparation of liquid spray would you use to prevent cherry rot on sour cherries?

A.—This year we also conducted, as we have been doing for several years, spraying and dusting experiments in cherry orchards. The trees received the three regular applications; for the dormant application lime sulphur was used on all the trees. The second application was put on just after the fruit had set and when most of the shucks were off, and the third application was made about the time the early cherries were beginning to colour. For the second and third applications, Bordeaux mixture, lime sulphur, copper arsenic dust and 90-10 sulphur and arsenic of lead dust were used in the various blocks. All these materials gave us control of brown rot on sour cherries. On unsprayed sour cherry trees we had 50% brown rot. In connection with the control of yellow leaf or leaf spot on sour cherries, Bordeaux mixture gave by far the best results. Notes made in August give the following percentages: Check—seventy-five per cent. fallen or yellow: Copper-arsenic dust—thirty per cent. fallen or yellow; Bordeaux mixture—foliage in beautiful condition, no yellow leaf; Sulphur dust—twenty-five per cent. fallen or yellow; Lime-sulphur—ten per cent. fallen or yellow. You can see from this that both lime sulphur and Bordeaux mixture will control brown rot on sour cherries, but in view of the fact that Bordeaux mixture gives better results in controlling leaf spot, I prefer to use it. This year brown rot was bad on sweet cherries. In spite of this, however, in our experiments the three regular applications of lime sulphur or Bordeaux mixture controlled the disease.

PRUNING AND FERTILIZING.

New Light on Old Problems.

Prof. J. W. Crow, Guelph.

The chief contribution of recent years to our knowledge of fruit tree management is that fruit bud determination takes place much earlier in the season than we formerly thought. I well remember when it was first stated that fruit buds had been detected under the microscope in July. Later investigators found that in some cases fruit buds showed very distinct differentiation as early as June. We know now that in the apple, fruit bud formation actually begins about blossom time and, what is far more important, that the condition of nutrition of the tree prior to blossom time determines whether or not there will be any fruit buds formed. This information appears to be fully authenticated for the apple, and I have no doubt in my own mind that it will be found to apply also to pears, plums and cherries.

We find by careful observation of the Wealthy apple that fruit bud determination is completed for the season by the time the variety has finished blooming. In some seasons at Guelph this will be toward the end of May, in other seasons it will be as early as May 24th or perhaps earlier. I do not mean that fruit bud development is complete at that time, but simply that fruit buds will be formed if they are formed at all as the result of conditions existing within the tree prior to that date. The Wealthy apple is, of course, very pronounced in its biennial fruiting habit. The tree produces fruit buds one year and blossoms the year following. Determination of fruit buds on the non-bearing tree is practically complete by the time the bearing tree of the same variety has finished blooming.

The practical application of this new information is of chief interest with respect to the possibility of securing annual crops in those varieties which fruit alternately. This will include many important varieties of apples, pears and plums. It is for this reason that our attention is now centered upon the conditions surrounding the tree in early spring, and which have to do with the amount and vigor of growth made at that season. Biennial bearing is a condition of over-fruitfulness for which the only treatment is to prevent the formation of so many fruit buds in the off-year. Moderate heading back of small branches throughout the top of the tree will force into vegetative shoots a considerable number of growths which in that year would otherwise form fruit buds. This stimulus to vegetative growth early in the spring of the off-year can be given also by the use of Nitrate of Soda and applications of stable manure at that time would no doubt have a similar effect. It is probable also that thorough soil drainage and early tillage may likewise contribute to the desired vigour of growth in early spring. It is highly probable that cold soil may act in early spring as a check upon growth and with trees of this kind under the conditions we have in mind, a check in vegetative growth in the early spring of the off-year is certain to result in a larger number of fruit buds.

If this viewpoint is correct one could insist, first of all, on the best of drainage for fruit land, also on early tillage in case tillage is to be practised.

So far as I am aware the above statements cover all that is at present known regarding pruning and fertilizing in relation to annual bearing. As has been suggested the problem in this connection lies actually in the direction of checking fruitfulness somewhat by stimulating vegetative growth. I am most anxious to see this matter tried out in commercial orchards, and may say we have at Guelph Wealthy trees which formerly bore in alternate years and which are now bearing annually, having produced full crops in 1920 and 1921 and being well set with fruit buds for 1922.

You will be interested in knowing whether the new information presented herein will have any relation to the problem of bringing young trees into bearing at an earlier date or of securing heavier yields from shy bearing trees. I am inclined to think that, in general, trees on cold soils tend to come into bearing later and to bear less heavily than those on well drained land. If this is correct the explanation lies no doubt in the better aeration and higher temperature of the drained soil in early spring. At the Indiana Experiment Station it was found that apple trees grown under straw mulch without fertilizer came into bearing earlier than those grown under tillage, although the tilled trees were considerably taller and larger. The explanation seems to lie in the soil conditions, as

the tilled trees rooted deeply, whereas the trees under straw mulch developed roots at or near the surface. Aside from the conditions which may enter into the two cases just mentioned I know of no way to hasten the bearing period of young trees, except by root pruning. There is some reason to suggest that phosphatic fertilizers may in some cases promote earlier bearing by their corrective effect on excessive vegetative growth. Certainly there is no method of pruning the top of the tree which will produce the desired result. We have been told for many years that summer pruning is a means of inducing fruitfulness, and many growers practise dormant pruning under the impression that they are likewise stimulating the fruit bearing tendency. The fact is that fruit trees come into bearing earlier with no pruning whatever, and actually bear more heavily if unpruned. The fact is also that the most important effect of pruning and the main object thereof in nearly all cases is simply to change the nature of the growth produced. We know that pruning gives results, but we should know also that the result on the tree is chiefly a matter of reducing the number and increasing the vigor of the shoots produced. The result on the fruit is similar. We reduce the number but greatly increase the size.

Summer pruning of bearing trees admits sunlight to the fruit and may greatly improve the colour but has no other value so far as I know. Dormant pruning may help to secure annual bearing if done prior to the off-year, or may increase the size of fruit if done prior to the bearing year. Aside from these the only important purposes served by pruning are in respect to forming the head of the young tree for maximum strength and securing the most convenient form and height of the same.

In general I am inclined to think we should aim to secure rather more growth on apples, pears, plums and cherries than we have been getting, and I would also suggest the liberal use of phosphate fertilizers for heaviest yields after trees come into bearing. In order to avoid winter killing it may be necessary to sow cover crops rather earlier than we have been in the habit of doing.

One should not omit to mention in a paper of this kind the possibility of inducing a heavier setting by use of fertilizers and by pruning; some varieties of pears and plums particularly, also apples to a less extent, exhaust themselves in blossoming and fail to set fruit. Severe pruning before growth starts may help to reduce the loss, and nitrate of soda applied ten days ahead of blooming gets pronounced results. There is a good reason to suppose that nitrate applied in the preceding summer may exercise a similar effect as it is absorbed in the tree and held as a reserve supply.

Mr. Macoun: I noticed Prof. Crow did not state in his paper how he got these Wealthy trees to bear every year.

Prof. Crow: I have given in my paper two methods to produce that result: one by moderate pruning back of small branches in the off year, and the other by the use of nitrate of soda supplied in the early spring of the off year. I should say a combination of the two methods would probably be more desirable. So far as biennial bearing is concerned; I pointed out in my paper the method of securing annual crops is to supply some stimulus to growth in the early spring of the off year. The same stimulus applied in the spring of the on year has no effect on the biennial bearing. If you want to correct biennial bearing we believe you may do it; at least in part and in a large measure successfully by stimulating the growth of the tree in the early spring of the off year, because as I tried

to point out it is in that year that the tree sets fruit buds and what you are aiming to do is to increase the number of fruit buds set. Then the following year you are due to have a very heavy setting of blossoms and a heavy crop of fruit.

Q.—How much do you apply to your Wealthies? A.—To a Wealthy tree eight or ten years old I would think four pounds of nitrate of soda ought to be enough.

Q.—Would manure applied every year have that same effect? A.—I would be inclined to say it would.

Q.—Every year? A.—If applied in the on year it would develop a crop of fruit in the on year; applied in the off year it may help to give annual bearing. Don't you think so, Mr. Lick?

Mr. Lick: I doubt that a little. I find putting on nitrate of soda or fertilizer when you have some buds on the tree makes those set. You cannot get a crop in the off year if you have not any blossom, but if you have blossom the nitrate is a factor that carries it through the rain and storm.

Prof. Crow: Might I add a word to Mr. Lick's suggestion? Our explanation of the way this works out is this:—In a Wealthy tree which is bearing every other year you get no blossoms whatever in the off year. Now, ordinarily, a tree of that kind will set perhaps up to 80% or 90% and we have actually counted as high as 93% of the growth on a Wealthy tree as fruit buds in the off year. By forcing the growth of that tree somewhat in the early spring of the off year you change into vegetating shoots four or five or six inches long and force some of these growths, which otherwise form spurs, into shoots, and you reduce the number of fruit buds in that off year. The result is in the following year you may reduce the percentage of spurs to perhaps fifty: that means that you have about 40% of spurs which are in a position to set fruit buds for the following year, and you arrive at two sets of spurs on that tree, one set bearing one year and the other set bearing the next, and no spur bearing two years in succession, because each individual spur operates independently, producing buds one year and fruit the next.

Mr. Lick: I may be wrong and you may be wrong, but we are both right on the practice.

Q.—Do you advise the use of nitrate for berries? A.—The year they are going to bear quite a number use nitrate of soda or sulphate of ammonia on strawberries, and some make two applications before the bearing season; I believe that gives results. In regard to raspberries I have not found any grower making any particular applications before the fruiting season.

Q.—How is that applied on the strawberries? A.— Nitrate of soda may be applied to strawberries, simply broadcast, with safety but it should not be applied when the leaves are covered with dew and especially just before rain. Acid phosphate is a valuable fertilizer for strawberries or raspberries. I would like to have land in good rich fertile state. These materials are only supplements.

Q.—Do you advise commercial fertilizer instead of barn-yard manure?

A.—I am glad you asked that question. I would not want it to be understood at all that I recommended fertilizer in place of stable manure. I believe the proper use of the fertilizer is a supplement to stable manure. I believe you have a difficulty in making commercial fertilizer take the place of farm manure. I realize many fruit growers are not able to get stable manure but the continued use

of commercial fertilizer gets you into difficulty with regard to the humus of the soil and the soil gets hard and dry and pasty.

Q.—What kind of fertilizer do you advise? A.—The only fertilizer I can recommend, almost without hesitation, for almost any condition in fruit growing is acid phosphate. Either phosphate or bone meal. I believe all orchard soils and fruit soils are deficient in phosphate. As far as I can learn there is no deficiency of potash, but phosphates give decided results on the crop. I would not want that recommendation applied to every condition indiscriminately; but I believe if any general recommendation can be made that would be it.

Q.—Do you mean acid phosphate? A.—Acid phosphate or super phosphate; some growers prefer bone meal. There are only two phosphate fertilizers that would be used in general practice, acid phosphate or super phosphate, and the other is bone meal.

Q.—Do you believe heavy cover crops turned in, take the place of barn-yard manure? A.—If you turn in a crop like red clover, it has the value of many tons of barn-yard manure.

Q.—Have you ever tried sweet clover? A.—Not particularly, but we have our own orchard sown partly to sweet clover now. Sweet clover makes a tremendous growth the next spring, and that is the time I would want it under ground. If we are going to cultivate the orchard at all, cultivate early in the spring, as early as the land is fit to work.

Q.—Do you plow. A.—For myself I plow my orchard the first thing in the spring. I would not wait for the spring growth in order to turn that soil over; I believe that is a mistake. I realize it has a value because you have roots there to turn under.

Q.—How late in the fall would it be safe to plow? A.—It is safer to plow later than earlier. I would prefer to plow the orchard about the last thing in the fall. If you plow an orchard too early, I have seen this work out with peach trees, you may actually keep those trees growing in the fall when they should stop growing and rest up, and I would leave the plowing until the last thing in the fall.

Q.—With heavy soil it is dangerous? A.—With heavy soil when plowed up rough and cloddy I would harrow it over, break up rather than leave it in that condition for the winter, because those big openings will certainly let frost into the ground.

Q.—Would you plow your apple orchard every year? A.—Would I recommend sod mulch of an orchard? I am not sure but that I might for the reason that there are some splendid orchards in this province under sod. I would say in that connection of course that sod without fertilizing or mulching is the worst possible thing you can do; but there are some good orchards handled by the sod mulch method, where grass or clover is cut and the soil is mulched around the tree and supplemented with stable manure or fertilizer.

Mr. Craise: In regard to that a neighbour of mine had an apple orchard that he had cultivated that way. It is all right in the average year possibly, but about three years ago—I think it was that mild winter—there was quite a little growth of grass around the trees and a couple of inches of frost, and the mice got in there and he had fifty per cent. girdling in the spring.

Prof. Crow: That sort of thing can be taken care of, but this observation might be made in that connection: It is a well known fact that where trees are

grown under sod mulch, and the trees are properly fed, those orchards suffer less from winter killing. I do not want to make any suggestion here that is likely to be misunderstood. I do not want to recommend sod mulching for orchards, but I would say if I had an orchard I would certainly consider that practice and perhaps try it out, because I am told there are some important advantages. I would not want to recommend it, but it is worth thinking about.

Q.—Do you get better results from phosphate used along with stable manure?

A.—I would say so decidedly.

Q.—What chemical do you find most valuable in connection with stable manure? A.—I would say phosphate fertilizers. Stable manure gives you all the nitrogen you need which for fruit trees is not a large amount.

DISCUSSION ON GRADING, PACKING AND PACKAGES.

C. W. Baxter: This is one of the subjects we have for consideration at the forthcoming fruit conference, and I have no doubt the delegates who have been selected by this Association to represent the fruit growers of the Province at that conference would appreciate very much having an expression of opinion from the growers here.

It has been suggested that the advisability of adopting the Imperial pint and the Imperial quart boxes as the two standard containers be considered at this conference. Last summer the markets across the line were very attractive to our berry growers in Ontario. I had occasion to visit Grimsby in the height of the season and we found buyers from the largest markets on the other side there who assured me they were prepared to buy twenty-five car loads of Ontario berries, but they said, "We cannot ship your berries into our markets in the quart boxes unless we stamp the box with the actual contents of the package," which was not practical at that time . So they asked us if there was any objection to importing the standard berry box of the United States. We consulted our manufacturers to see if it was possible for them to supply these boxes, but they said they could not do so. The buyers said, "There is nothing for us to do but bring in these packages," but they did not succeed in getting the supply; therefore, our growers in Ontario lost the sale of twenty-five car loads of berries. While we might not always find such a market in the United States, still I think it is the feeling of many that we should be prepared to take advantage of these markets when they are offered. In British Columbia they use the two-fifth's quart box and the pint.

Mr. Fletcher: I represent the Clarkson Fruit Growers' Association. I have made inquiries amongst our growers to find out the consensus of opinion on this matter of standardizing our quart box as compared with the American quart, and the members of our Association at Clarkson are not favourable to the American quart. They feel that at the present time if we introduced the Imperial quart that we will not obtain any more returns for an Imperial quart of berries than what we do for the four-fifths quart, and besides we will have to pay more for picking. With the present cost of land and of producing a quart of berries we feel we cannot afford at the present time to hand out this gift to the consumer unless we can be assured that we will be sufficiently remunerated for the increased size of the box.

Mr. Craise: Speaking for the Niagara Peninsula Growers, last year we did not make any experiment with regard to strawberries in the pint box, but we did with raspberries, and we just received slightly over two cents less for pints than for quarts. I do not think that is making any gift to the consumer, but it is a nice thing for the producers. If we can get more money out of the pint box than out of the quart, let us have it, for we need it.

Mr. Baxter: I would not advocate using the quart box for raspberries, the pint box would be the largest package suitable, and only in a year of large crops would we use the quart box for strawberries.

Mr. Pallett, Clarkson: The first market of our Ontario berry is destroyed by the importation of American fruit. We supply the home market for the canners and the housewife; we give her good fresh berries in our own quarts. As you all know during the first week of the berry season the berries are firmer than during the second week and during the last week the berries become soft. If we hold to our quart as at the present time and endeavour to create a better home market, I believe every berry will be sold in Ontario. It seems only fair if our government at the present time allows the American people to flood the market with their quart because the price here is better than in their own market, that we should have reciprocity, and our quart should be allowed to go to the other side. I think in this case we are giving something to the American people and getting nothing in return. It does not seem fair to me if the American quart can compete with my quart in Toronto why my quart should not compete with theirs in Buffalo. Our quart up to date is good enough for our own people, and should be good enough for the American people.

Mr. Johnson: They cannot tell early in the season whether they are going to have a good crop of berries or not, and they must have a certain amount for canning, and making into jam. Any who have been on the other side will know that they pay more for the berries than we do over here. The American buyers came to us last year and paid thirteen cents a box for our berries in the four-fifths quart, and in the full quart they paid one cent more a box for the berries than they did in their own state.

Mr. Armond Smith: In the first place being a jam maker I will try to reply to Mr. Johnson. We do not buy in the United States just to lower the price of berries in this country. We buy there in the expectation that they are lower there than the berries will eventually be in our own country. Taking a span of years we consider it would be safe in buying a certain number of berries there cheaper than in our own country, but we only buy a certain proportion over there. We are personally in favour of the Imperial quart box and the Imperial pint box, and we think our growers should use the same box as the United States because we feel we could take advantage of the American market when the price is higher there; but I differ from Mr. Johnson that the price is always higher in the United States. We cannot tell what price we will get until right in the season, and then sometimes it is too late to get the quart boxes. Taking all in all, I think it is best to have the Imperial quart box and be able to enter the American market when it is higher than ours.

Mr. Fisher: As a grower of strawberries I have heretofore very largely held the view that our friend from Clarkson expressed, but I have begun of late

to see things in a little different light. I believe it will be beneficial for our growers and for our markets if we standardize these packages.

MR. SHOOK: In regard to the standardization of the quart, I do not feel as Mr. Fisher does. He says he has seen things in a little different light lately in the last few months. I believe the Clarkson Fruit Growers' Association are the heaviest shippers of strawberries and raspberries of any association in the province. We handled last year in the neighborhood of two million quarts. We feel that the quart we have now is the one we want to stay with, and we have found out that three of our quarts will make four for the retail dealers and if you increase the size of the quart we do not think we would be sufficiently remunerated to pay us for the berries. It is an established fact that the Italians make four quarts out of three, and our trade is mostly retail.

MR. BUNTING: I think we will have to meet the American proposition and adopt the Imperial pint and quart.

MR. MAHONEY: It would be a great advantage to our growers in this province if they would adopt as far as possible the American package.

. The experience of our company this year is that the pint package is the proper package for raspberries, and if we had the American box for our strawberries we could have unloaded a considerable quantity there and relieved the local market.

MR. WATSON: That being the case why should not the peach and plum growers here to-day adopt the American container for these products. I think we are losing sight altogether of the keeping qualities of the Canadian berry in comparison with the American berry. We all know that the American fruit will stand up much longer and much better than the Canadian fruit. On the Toronto market last year there were many consignments of berries which should have brought 14 or 15c. but which were sold for 4c. Why? Because the growers are not equipped with pre-coolers. Large growers with eight or ten acres should have pre-coolers. If we ship in American boxes to the Toronto fruit markets the loss is going to be very great through spoiling. I am sure the commission men in Toronto would bear us out in that statement. I think we are making a mistake to advocate the standardization of the American package until our products are handled completely through associations that have pre-cooling plants. We have at the present time and the box which we now have is preferred by the Toronto consumer.

THE CHAIRMAN: The final decision of this matter rests with the convention at Ottawa.

STANDARDIZATION OF BERRY CRATES.

MR. BAXTER: We received numerous complaints as to the quality of the berry crate which was being supplied to the growers. Our good basket manufacturers will know in many cases the containers were not sufficiently strong to enforce the safe carrying of goods beyond the railway station. We have been requested to control the manufactures of berry containers, as we do baskets

and other packages. I would like to express the Fruit Branch's appreciation of the great co-operation we have had from most of the basket and package manufacturers during the last year, and I think they too will be pleased to have the berry container clearly defined.

THE CHAIRMAN: The question is whether the construction of the 24 or 27 box crate should be standardized like the baskets and which of these two will carry our products more safely to the markets. I think we can leave that in the hands of our representatives.

GRADES FOR TENDER FRUITS IN OPEN PACKAGES.

MR. BAXTER: At the present time the only regulations in respect to fruit in open packages is that each package shall be marked with the name and address of the packer. The principle of grading farm products is generally recognized to-day. I think we feel that any agricultural product that is not standardized is not keeping pace with the markets, and I think our growers feel there should be grades adopted for fruits. Having that in mind we prepared grades for tender fruits two years ago. Nothing was done with it at the time, but last year at the annual meeting of the Niagara District Fruit Growers Association these tentative grades, prepared largely for the purpose of bringing out discussion, were submitted at these meetings and committees were appointed to go into them. I do not know that those committees met. But the Niagara Peninsula Growers Limited, realizing the advantages of grading, took the matter up and in consultation with the committees appointed by the Association made certain changes of which we were glad to approve, and the Niagara Peninsula Growers Limited used them in their business last year. Mr. Mahoney will be glad to tell us with what degree of success. At the time we prepared these we had no thought of incorporating them in any legislation. My idea was that if the growers would adopt these grading rules, the Fruit Branch having federal supervision might recommend their adoption and their use probably for a year or two to try them out. During that time we could determine what changes may be necessary. These grades have been tried out in the Niagara Peninsula to a certain extent during the past year, and it may be advisable to recommend their adoption for the next year or two.

MR. MAHONEY: As Mr. Baxter has stated, we established grades for the growers, and we met with considerable success in doing so. While it was a difficult matter the first year of our operation to secure the co-operation of all the growers in observing these grades strictly, still we made considerable progress, and we feel in this coming year's business by having a sufficient number of inspectors to see that these grades are maintained it will be a great advantage to have in our selling operations. There is no question about it if we had the backing of the Fruit Branch in this matter we would much more easily accomplish the purpose we have in view.

CENTRAL PACKING HOUSES FOR ONTARIO.

Col. H. L. Roberts, Grimsby.

In regard to central packing houses, the experience of the Niagara Peninsula Growers this year has demonstrated beyond question that the whole crux of the tender fruit question lies in the matter of grades. It has also been demonstrated how much improvement has been made in grading in localities in which co-operation has been enforced as compared with those in which it has not. Anyone who has seen the results of handling fruit that has gone through central packing houses as compared with fruit that has not gone through will have no doubts of the advantages in that regard. I hope it will be possible for the tender fruits to be handled through the packing houses as well as apples and pears. In the old days in Grimsby we started co-operative packing houses for tender fruits, such as peaches, and we had considerable difficulties. We had not the facilities to handle them. Packing houses should be well adapted for their purposes, both in connection with the location for shipment and its flexibility for the quantities of fruit coming in. There are two principal things to be considered in the matter of construction. If the stuff is to be handled over a grader then it will have to correspond more or less to the methods used in the citrus industry and other industries where the crop is graded and where each individual's product is brought in and kept separately and then put through the grader and packed out. On the other hand if you have tender fruits in many varieties such as St. John and Crawford peaches, which will not stand the grading, I do not think there is any other method than giving the individual members of the company their own location in the packing house and having their fruit put into a recess as it were and packed there and graded as it goes out. If that is to be done it is necessary that the division between these packing areas should be flexible. These are matters that require to be worked out, but I think they can be overcome, but by far the more important point is that the locality of the packing house should be convenient for shipping purposes.

We made a fatal mistake in placing our packing house convenient for the growers without considering the matter of placing it convenient for shipping. The idea of that was to get the grower to bring his stuff to the packing-house early in the day so that the packing operations could start early. But you cannot get the growers to do that, they wait until they have their load ready, and you cannot start your packing until the afternoon. If the packing-house is placed convenient for shipment, that is on the rail, you will avoid the rehandling necessary when it is placed convenient for the growers. Even if it is not possible to have cold storage facilities at each point it is at least possible to have refrigerator capacity near the plant, say, an iced car placed to take the surplus that does not get off in the shipment. By that method it would be possible to work out the packing of tender fruits. I feel that the question of tender fruits is a vital one for the Niagara Peninsula and that is my excuse for introducing that end of it so much. I do think this problem, although not simple is solvable, and it is up to the Niagara Peninsula to solve it, because I do not believe we will ever succeed in grading that will give us the confidence of the consumer and be fair to the grower until we have fruit moving through central packing houses and very rigid inspection on the fruit that does not go through. I think exactly the same applies to the apple and pear proposition. There are many districts where by far the more satisfactory way of handling the fruit would be through central

packing houses, and there are other districts where conditions would not allow it. In that case, rigid inspection is absolutely necessary. As far as the Peninsula Growers are concerned I hope their policy will include at least the beginning of a central packing house for tender fruits next year.

ADDRESS.

HON. MANNING W. DOHERTY, MINISTER OF AGRICULTURE, TORONTO.

I congratulate you on the success of your meeting, and also upon the wisdom shown in the making up of your programme. I notice from it that you have not devoted your attention alone to one phase of your industry but, in addition to considering the best methods for the protection of your crops, you are considering also the best methods of marketing your crop. I believe that our farmers in this Province and in this Dominion to-day realize that there is but very little use in producing anything unless there is a market for it. I have been pleased during the last year to see a spirit developing among those engaged in all the branches of agriculture, a spirit which would indicate that they realize the prime necessity of acting together in the handling of their crops.

Only two weeks ago I had the pleasure of attending the Agricultual Economic Conference in Washington which was called by President Harding. That conference was called because the men in charge of the Government of that country realized that the great agricultural industry of the United States was in such a critical position and condition that it was jeopardizing the safety of every other industry in the country. At that conference we had some of the leading bankers and business men of the United States, and we had farmers from every branch of the agricultural industry and from every State in the Union. I came away from that conference with the feeling that at least the business men in that country were fully seized with the importance to them of the agricultural industry being stabilized and being put upon a basis where men could go into it, and with the exercise of intelligence and industry, be fairly sure of a return on their investment and on the labour they put into it. They realize that they are up against a condition which has got to be rectified if the whole industrial fabric of that country is not to go to the wall. That is why we had on that platform men like Mr. Myers, of New York, the multimillionaire banker, who was a most enthusiastic advocate of an extension of a grading system which would meet the needs of the farmers of the United States. President Harding made a statement, on which he defied contradiction, that in viewing all the agricultural countries of the world, this great truth is brought home to us: the countries which are going through this period of deflation best are the countries in which the agricultural industry is best organized; and he pointed to the various countries and indicated the degree to which they were feeling the depression. He said, "We can go one step farther than that: we can go into each and everyone of these countries (and he analyzed the conditions prevailing in the various branches of the industry in these countries), and we find that the various branches of the agricultural industry have prospered in 1921 exactly in proportion to the degree of their organization. In the face of this, it behooves every man, professional and business, to do everything in his power to enable the farmers of the country to become organized." It was shown there, and I want that point to be understood in this country, that whereas in the beginning it was felt by many of those who occupied a place in the wheel of machinery by which we transact our busi-

ness, that the organization of the farmers was going to eliminate them, that feeling has entirely been dissipated, and those who are in the business of handling agricultural products to-day—commission men and such like—acknowledge that they would not for the world have these organizations go out of existence, and they want them to go on and to prosper.

Let me say in particular reference to the matter under discussion, that I have for years held that what we must have, if the industry is to be permanently successful, if it is to be stabilized, is economic production. If we are to compete successfully, we must produce economically. Assuming that to have been accomplished, or on a fair way to accomplishment, then the step we have got to look to is this: that our products are marketed economically and profitably, and the economic and orderly marketing of farm products has never been successfully accomplished in any other way than by the organization of the producers themselves.

After we had heard men from the livestock industry in the West, men representing the corn growers in the Middle West, men representing the cotton growers—branches of the industry which were not organized—depict the deplorable conditions which were prevailing, it was very encouraging to have a man like Mr. Powell of the Citrus Fruit Organization of California stand up and say: "While 1921 was not the best year that our organization ever had, I can say that there was not a member of our organization growing fruit in 1921 but made money; we had a big business, over $100,000,000, and everything was sold."

Now, it was encouraging in a year like we have gone through, with the decreased purchasing power of the people, to find others, by organization, had reached out and placed their crop no matter how large the crop was, and no matter to what degree the buying power of the public was embarrassed: they simply extend their markets.

In our fruit industry here, I have all along felt a great deal of attention should be devoted to this, and as head of the Department of Agriculture I am very anxious to have the views of those who are directly concerned in that industry, the fruit growers of the Province.

The matter of the establishment of central packing plants has been brought to my attention several times, and I can assure you, it has received sympathetic consideration from me, because I have always claimed that we can never place our products on the markets of the world, so as to get the greatest returns, with the least expense, unless we properly grade, standardize our grades and insist upon our grades being lived up to. I feel this is absolutely true in regard to the fruit industry because, while I am prepared to acknowledge the intelligence shown by the farmers in British Columbia in their organization, I have time and time felt that we should wake up, and if we cannot get and hold other markets, at least hold the markets right at our own doors, and hold at least a fair percentage of the markets not only in Western Canada but in Great Britain. It is shown beyond dispute that we can produce in Ontario as fine apples as can be grown on earth. But our apples do not occupy the first place in the markets of the world, nor in the mind of the buyers of the world because we have not sufficiently established our grades and insisted upon our goods going on the markets in those grades.

This trophy shows that we can produce and we can win. The matter of another Show this year in England is under consideration at the present time. My own opinion is that we cannot afford to lose the opportunities we have at this

very critical stage in the history of our agricultural industry, of showing the people of the world that we can produce the goods and do produce them, not only in our fruit, but in our livestock, and in every other line. I feel that this Show held in England once every two years would be quite sufficient, but a meeting was held a few days ago over there, and the feeling seemed to be that they would like the Show again this year. Our representatives there made the suggestion that if the Show was to be held again this year, Canada should be a little better represented upon the executive so that they may have a little more to say in the selection of those who are going to do the judging. I believe the suggestion was accepted, and although it is not distinctly settled, it looks at the moment as if the Show would be held.

In regard to these packing plants, I believe that every possible encouragement should be given to the grading of our products. How far should the government go in these matters? This is a very important question. Personally I have always felt that the government should go only so far and then should have absolutely nothing to do with the management of the affair. I feel that these organizations prosper better if they are founded on proper principles, and are left under the management of the right kind of men.

I would like the department to assist in getting our growers to adopt the grading principle for all their fruit. With that in mind, I have drawn up, in rough draft form, what was in my mind, and I would like to have from this meeting suggestions. If you feel that the Department should not assist in any way in the establishment of these grading stations, all well and good; if you feel that the Department should assist in some other way, than herein suggested, I would like to have it; if you feel that we should not assist to the degree that I suggest. I would like your recommendation.

It is not necessary for me to read this in detail. The idea is that the Department should offer assistance to Co-operative Fruit Organizations in the establishment of grading stations.

An association shall mean any co-operative organization of fruit growers incorporated under the Ontario Companies Act or other Acts of the Province for the purpose of marketing any kinds of fruits, and holding at least 100 acres of bearing fruit lands, the fruit from which shall be contracted to be sold through the association. Upon the recommendation of the Minister a grant shall be made in accordance with the provisions of this Act for the purpose of erecting or providing for the necessary storage of the fruits grown by the members of the association, such grant shall not exceed 25% of the present value of the building or a total of $1,500 in any one case.

It may be you think 25% is too much or not enough; in either case your views will be very seriously considered. "The plans and location of the buildings must be approved before the grant is paid and no such building shall be disposed of by any association without the consent of the Minister. The control and management shall be invested in the association, and the association shall fix the charges and may accept fruit for grading, packing and storing from growers not members, on such terms as may seem reasonable." I am not sure whether that paragraph is satisfactory or not. The idea I had was this: that in these grading and packing houses facilities shall be available for all the growers in the district, so that it shall not be possible to keep them in the hands of half a

dozen growers. A grower might not at first see the advantage of such facilities and might not come in the first year but in another year he might change his mind. I think the facilities should be made available to any grower in the district who wants to come into the association.

Those are the only paragraphs of any importance. I would like the views of the meeting, in the first place, the necessity for the establishment of central packing plants, and your suggestions as to how our department can best assist in this work. I know that this move has the approval of our friend Mr. Baxter and his department, and I am sure that the Federal Fruit Department will co-operate and assist in every possible way. No doubt Mr. Baxter himself will state to what extent his department will be prepared to assist in carrying out this work.

OUR SALES ORGANIZATION—THE NIAGARA PENINSULA GROWERS, LTD.

T. J. Mahoney, Grimsby, General Manager.

In dealing with the matter of sales organization, I will confine my attention to those in the Niagara district, because it is with the sales organizations in that district that I am particularly acquainted. It was my privilege last year in speaking before this convention to deal with the organization of the Niagara District Grape Growers' Company, and I explained to you the object for which that company was organized. It was organized in order to deal with an emergency which had arisen during the year 1920, on account of the basket famine. Owing to the acute shortage of baskets in the district it was felt by the grape growers, disaster would overtake the grape crop unless some means were taken to control the basket famine which was prevalent in the district. In order to meet that situation the grape growers, at a meeting held in St. Catharines on the 7th of August, 1920, decided to organize a company in order to secure, in the first place, sufficient packages to market their crop, and in the second place to secure a fair price for their product, which up to that time had been fixed by the wine manufacturers and dealers.

The two-fold object which the grape growers had in organizing were certainly accomplished in their first year, because we imported from the United States enough bushel hampers to market 200 cars of grapes in the United States. Of the 410 cars of grapes which we handled between September the 13th when we opened our office in St. Catharines and the 11th day of November when we shipped our last car load there were 341 placed on the United States market, the balance were sold in Ontario, and the price obtained by the grape growers for the crop that year was certainly the highest they had ever obtained in the history of the Niagara Peninsula.

It was the success which the grape growers had the first year of organization which convinced the other grape growers in the district that organization and co-operation would possibly solve a good many of their troubles, and if the organization had been in existence in 1920 when there was an abnormal fruit crop it would have saved the fruit growers much of the loss experienced that year. No person was more convinced than the Minister of Agriculture, and it was under his auspices that the meeting was held in Vineland on the 26th of November 1920, for the purpose of discussing the advisability and practicability

of organizing a fruit marketing company for the remaining fruits of the district. At that meeting there were twenty-five prominent growers present, also representatives from several small co-operative companies in the district. After a thorough consideration of the matter it was decided that the proposition was practicable and feasible, a sub-committee was appointed to draft rules and recommendations which were later submitted to a much larger meeting held in Hamilton on the 28th of December, 1920.

That meeting considered the rules and recommendations as drafted by the committee, and after some revisions it was decided to adopt these rules and recommendations, and to appoint provisional directors for the organization of the company. These provisional directors worked for some four months, and they certainly had a very difficult problem to solve. They had to reconcile the conflicting interests in the district, line up the five small co-operative companies which had a total membership of eighty, and they also had to persuade some of the dealers in the district that it would be in their interest to line up with the new organization and help make it a success. In accomplishing these different objects they were successful to the extent they were able on the 11th of May, 1921, to have an organization meeting of the Niagara Peninsula Growers. I may say that the fruit growers of the Niagara district certainly owe a debt of gratitude to the provisional directors who did such hard and difficult work in order to start this company on its way to progress.

The grape growers' organization included the whole district from Hamilton to the Niagara River, and I think it was the first co-operative company organized in the district which ever attempted to include such a large extent of territory. The Peninsula Growers in organizing included the district from Burlington to the Niagara River and the Fonthill district. It was divided into fourteen divisions: Burlington, Stoney Creek, Fruitland, Winona, Grimsby, Grimsby East, Beamsville, Vineland, Peachland, St. Catharines, Niagara-on-the-Lake, Queenston, St. Davids and Fonthill. A manager for each division was appointed to look after the shipping and do the other business of the company.

It might be of interest to know how the stock of the company was made up, and the amount each fruit grower had to subscribe in order to be a member. The stock of the company was non-dividend bearing, and the amount each member had to subscribe was based on his crop turn-over for the year 1920. If he had turned over less than $2,000, one share; between $2,000 and $4,000, two shares; $4,000 and $6,000, three shares; $6,000 and $10,000, four shares, and over $10,000, five shares. He was required to put all his fruit through the company and the fruit was pooled according to grades and varieties, and he was paid for the fruit every two weeks, on the 10th and 25th of each month. 20% was held back to cover overhead expenses of the company. After the business of the company was completed on the 31st of December, the balance from this 20% was returned to the owners. We closed our books on that date, and it was found the treasury expenses amounted to 12%, and the balance was returned to the growers. Of that 12% treasury expenses, 1½% was absorbed in equipment and organization expenses, which really should be charged to capital expense, so that the annual cost of operating the company was really 10½% instead of 12%.

In beginning the first year's work the company had a number of difficulties to contend with. The objects of the company were possibly misunderstood by some, and we met with difficulty on that account. Of course we expected opposition from those interests which had prevailed in the past and whose business

would be affected by the success of an organization such as our company aimed to become. We were also misunderstood, I think, to some extent by the general public. There was an impression created that the company was merely a big combine organized for the purpose of boosting prices and it was not going to give the public any compensating advantages. The principal object was by proper grading and systematic marketing to eliminate the waste which had prevailed in the district in the past, and we know waste and loss is of no benefit to any person. There is no question about it that with proper organization and a proper system of marketing, waste can be largely eliminated to the mutual benefit of the consumer and producer alike.

We had every difficulty to contend with in the abnormal weather conditions which I think were probably the worst we have had in thirty years. The government record showed that the summer of 1921 was the hottest in thirty years, and as a consequence all crops matured in advance of their normal time. As a result the shipping qualities of the fruit were very much inferior to previous years. There is also disadvantage in marketing any variety of fruit before its proper season because the people are not ready for it, and the result is they do not buy as freely as they otherwise would.

There was another factor which influenced the market to a considerable extent, and that was the limited amount of fruit used by jam manufacturers and canning factories. As you know the jam manufacturers and canners carried over a considerable stock from 1920, and they were not in a position in 1921 to take their usual supply, which had a very serious effect on the marketing problem. Another factor also was the high cost of transportation as compared with other years. It cost this year to haul an eleven-quart basket of fruit to Winnipeg, 40c., and that 40c. had to be paid whether the fruit arrived there in a condition to be commercially used or not. That was certainly a very considerable increase over the year 1920.

There was another item of expense which we had to meet, and that was 50% increase in the cost of icing over 1920. 1920, the cost of icing was $4 a ton; 1921, $6.50.

Those are factors which certainly affected the market this past year, and on top of that we had the great amount of unemployment which existed in Canada, and which decreased the buying power of the country to a great extent.

Notwithstanding these difficulties the company has had a successful year. We market forty-nine different varieties of fruit and vegetables, and the total volume amounted to something over 1,700 cars. Of the different varieties marketed there were eighty-five cars of strawberries; thirty-five cars of raspberries; 564 cars of peaches, seventy-nine cars of plums; forty-nine cars of cherries; 324 cars of grapes; 133 cars of tomatoes; fifty-four cars of canteloupes, and there were a large number of other varieties of a lesser amount. The whole totalled something over 1,700 cars. We succeeded in disposing of them to fairly good advantage. A good deal of discussion took place this morning with regard to the question of grading. One fact which was impressed upon us more strongly than any other was the necessity of grading if we wished to get any place in successfully marketing our fruit. There is no question about it, one of the principal handicaps which the fruit growers of the Niagara district have had to contend with is the lack of uniform grading, and in order to overcome that handicap one of the essential things is a central packing house and better cold storage facilities than we have had.

Although the Niagara district is one of the oldest, possibly the oldest, district in Canada, it is a remarkable fact we certainly have a lack of facilities for handling our fruit profitably and systematically. When our company started business this year we did not have a central packing house in the whole district. We know it is by means of taking advantage of central packing houses and cold storages that the B.C. growers and co-operative companies in the Western States have been able not only to drive us out of the western market, but to take our own markets here in Ontario; and I think it is safe to say, as has been said on different occasions before, that the only way to reach our competitors successfully is to adopt the methods they have adopted and which have proven successful. There is no doubt about it that the means which have enabled the British Columbia growers and co-operative companies of the Western States to pack and ship their fruits so successfully is because they used central packing houses and cold storage facilities and, as I have stated, one of the big handicaps which the company was under in its first year's operation was lack of these facilities in the Niagara district. We had in the shape of cold storage facilities only the obsolete structure at Grimsby with a capacity of fifteen cars, and there is no doubt thousands and thousands of dollars have been lost to the fruit growers this year because we lacked these necessary facilities. It is true they had cold storage facilities in Hamilton, but those were not convenient to the growers and could not be taken advantage of in the emergency which arose in the middle of the tender fruit crop in a hot season such as last year.

Possibly no better example can be given than that which was afforded by the Grape Growers' Company in storing, during the slump, some fifty cars of grapes in Hamilton. It was done under difficulties, because it meant a lot of handling and an added expense of something like $3,000. However I think it saved the situation with regard to the grape crop in that critical period of the season. It certainly saved the market from breaking, and those who are engaged in marketing know what it means when a market breaks, and how difficult it is to get it back. On the grapes which were stored at Hamilton we realized at least anywhere from $15,000 to $20,000 more than we would have realized had they been sold at that time instead of being put into cold storage, and we did something that had not been done before by any other company either in the United States or in Canada. The sales manager of the American Fruit Growers who handles our American business stated that in his opinion no such attempt had ever been made to store grapes, and the fact that it was successful speaks well for the judgment of the men who were particularly instrumental in trying out that experiment.

It might be asked what the company has accomplished since it started some nine months ago. There is one thing the company has accomplished, and that is by its constant driving home to the growers in the district at the different meetings held, the absolute necessity of better grading of their products. I think we have also demonstrated the fact that the best results can be secured through grading in a central packing house. One district under our control certainly got this idea, and acted on it, and that was the Burlington district. Shortly after the season commenced the growers invested $13,000 in a central packing house at Burlington. It may be of interest to those who are thinking of a central packing house in their district to know that on the 4,000 or more barrels of apples put through the packing house the average cost of packing ran from 15c. to 27c. a

barrel less than in other parts of the district, so the amount saved in packing alone on the apples was sufficient to cover the interest on the investment. Pears were also packed from that central packing house, and of 119 cars of pears which the company handled, eighteen were exported to the Old Country, and they brought a very satisfactory price and helped to relieve the market here to that extent. There would have been more sent to the Old Country had we the necessary facilities for packing and grading. We did not have those facilities except in the very contracted space in the cold storage at Grimsby and Burlington. Had we facilities in other parts of the district to take care of pears we could easily have shipped another twenty-five or thirty cars, and the price here would have advanced accordingly.

I am glad to know that the Minister of Agriculture has seen the necessity of central packing houses, and is inclined to give some encouragement in the way of financial assistance. I do not know whether it is the proper time to express my opinion on the amount of assistance he proposes to give. I was impressed by the photograph passed among the members yesterday showing the space in the fruit show at the exhibit at London. You might have noticed there was a sign which stated that the Province of Ontario had 300,000 acres of land planted to fruit. If the Province of Ontario has 300,000 acres of land planted to fruit surely it is up to the government to do a little more for the fruit growers of this province than they have done in the past. I am not making this statement by way of criticism at all, but there is no question about it that when the fruit industry of this province is in the condition it is in at the present time, where we are practically driven off our own market by British Columbia and the United States, it is certainly time for the government to take definite action, and this applies to the Dominion Government as well as the Provincial.

In 1920, the biggest fruit year we have had in this province and possibly in the Dominion, there was imported from the United States $19,000,000 worth of fresh fruits, and when you consider exchange ranging from 12% to 18% you will realize the amount of toll the people of Canada paid the United States fruit growers. I consider the giving of some substantial assistance to keep this money at home is a matter of sufficient importance to impress on any government, whether Federal or Provincial. For that reason I hope that the Minister of Agriculture for the Province of Ontario will endeavour to be a little more generous in the grant which he proposes to give to the central packing houses.

With regard to cold storage facilities I am glad to say that owing to the public spirit of one of the citizens of Grimsby, Col. Roberts, to whom the fruit growers owe a debt of gratitude, we will have next year in the Grimsby district an up-to-date cold storage and pre-cooling plant with a capacity of sixty-five tons of ice a day and a storage capacity of fifty cars. Owing to the publicity which has been given to the necessity of cold storages for our fruit industry by the Provincial Growers' Company and the Niagara District Grape Growers' Company, there is also under way a similar plant in St. Catharines. In fact, I understand from Mr. Welsted that $200,000 is already in sight for that project, and we will have these facilities in St. Catharines this year. There are also districts where cold storage facilities would be commercially profitable, and it is up to the government, whether Provincial or Federal, to give the necessary assistance to these districts to enable them to have such a building. I do not know what the regulations are from the Federal Government, but whatever they are they should be changed if necessary in order to apply to sections like Burlington or other

similarly situated sections of the province. I think these remarks are worthy of consideration, and I am glad the Minister of Agriculture and the Chief Fruit Commissioner for the Dominion are here, and I hope they will impress on their departments the matters which have been brought before them.

There is no question about it that grading is a very important factor to successful fruit marketing. In order to do your grading properly it is necessary to have central packing houses: and in order to ship, especially for long distances, it is necessary to have cold storage and pre-cooling facilities. If we could have these facilities and make use of them as we expect to do there is no reason why we should not be able to hold our market here in Ontario, and also gain some of the advantages we have lost on the western market. There is also no reason why we could not sell a good deal of our products in the Old Country. It has been done this year to some extent, and it can be done to a greater extent with the proper organization and facilities. When we can be sure our product is properly packed and graded and so shipped that it will arrive at its destination in a satisfactory condition we can then establish a brand, and when we reach that point we should make use of an intelligent advertising campaign of our products.

One reason why our company this year has refrained from any extensive advertising has been due to the fact we were not sure of our grades although the company established its own grades. We have 650 growers in our company, and many of them have had no experience in grading, and they could not be expected to learn everything in one year. It would have been a real hardship had the company endeavoured to make all the different growers grade up to standard because it was simply impossible for them to do so. We hope to arrive very shortly at the stage where the growers will grade up to the grades, established by the company. When that time comes and our products are properly shipped and packed we feel that real advertising will be of some use to the company and the fruit growing interests of the province. We certainly think that in the accomplishing of these different objects which I have cited, we should have the assistance and backing of both the Provincial and Dominion Governments, because there is no doubt about it that other parts of the province and the country is watching what might be considered the experiments going on in the Niagara Peninsula.

Of the 952 shares of stock which we had, 20% was paid up by the members of the company amounting to about $18,340. The total cost of our equipment and organization was $33,280, and the difference between that and the $18,340 was made up by deducting an amount from the sales, instead of calling for further payment of stock from the members. The intention was, when the company was organized, that 30% should be paid on the 1st of October, 1920, which would make 50% paid up, but owing to the short crop it was felt it might be hard to call that 30% on the 1st of October, so we omitted doing so. The balance of the organization and equipment expenses was made up by deducting 1½% from the total sales turn over of the company of $1,501,000, which included $324,000 worth of grapes sold for the Niagara District Grape Growers.

THE NIAGARA DISTRICT GRAPE GROWERS, LTD.

W. G. Montgomery, Manager, St. Catharines.

Mr. Mahoney has thoroughly outlined the inner workings of the Niagara Peninsula Growers, Limited, but he is also President of the Niagara District

Grape Growers' Company, and their work is carried on along the same lines as the Niagara Peninsula Growers, Limited. It is on a co-operative basis and the company has been operating fifteen months to date. The association known as the Niagara District Grape Growers was formed by a number of the large growers throughout the section in 1920. In August 1920 they received their charter as a limited company and started doing business on October 5th of the same year. In that year they shipped some 410 cars of grapes, 310 cars to the American markets and the balance sold on the Canadian markets, making a gross turnover of half a million dollars. That was the first year's operations of the Niagara District Grape Growers' Company, with some 400 members and from 150 to 200 shareholders. The past season of 1921 we feel has been the hardest we have ever had or will have on account of the market conditions. The grape crop this year was at least one month earlier, and conditions throughout the United States and Canada were far from normal. Of 752 car loads of grapes, about 346 cars were shipped to American markets and 325 cars sold on the Canadian market, and the balance sold to the local wine manufacturers: making our gross sales turn-over for the year $890.000. You understand the Grape Growers' Company handles nothing but grapes, and controls approximately 90% of the grapes grown in the Niagara Peninsula between Hamilton and Niagara Falls. We have 900 grape growers and 350 of these are shareholders of the company.

The policy of the company has been, as far as stock is concerned, to make it optional for the grower as to whether he takes stock or not. We have $41,000 stock subscribed to the company: that has all been subscribed voluntarily. 10% has been called up, and the stock has not been used in any way. That was the policy of the Association before the company was formed.

In 1920 we paid back to the growers of the Niagara district who delivered grapes to the company as a first payment on their entire grape crop $85 a ton, and at the end of the season we pooled our profits pro rata and we paid back $33,000 to the growers as a bonus. This year we were up against an entirely different proposition. We had very serious market conditions throughout Canada and the United States, and the biggest problem was the grape crop coming on at least one month earlier, and this year we paid the growers the highest price I think ever paid in the Niagara Peninsula for any grape crop. We paid the growers on an average 40c. per basket, that is six-quart baskets, and $85 a ton on bulk shipments. I believe that was due to co-operation as we had probably 90% of the grape crop under contract and the growers belonging to the company stayed with it from start to finish and we finished the year very satisfactorily.

Mr. Mahoney has mentioned the cold storage facilities, and also that we stored fifty cars of grapes in Hamilton. This was just an ordinary storage warehouse, not equipped for handling grapes or storing fruit. We got this warehouse into the best shape we could and stored these grapes, putting them in from the 15th to the 25th of September and taking them out from the 15th to the 25th of October. They were in on an average of four or five weeks, and we sold that fifty cars at a profit of $12,000 over and above the price we would have had to sell them at had we sold them at the time we stored them.

The Niagara Peninsula Grape Growers are anxious to have cold storage facilities throughout the district. We are quite willing to contribute in any way we can. It cost us $5,000 to put those grapes in Hamilton, which we could have saved had we storage facilities in the heart of the district.

At the present time our market in Western Canada on grapes is going back, due to the fact that the Western fruit jobbers say they cannot handle our product and make a margin of profit on account of the rates. There were eight or ten cars of California grapes going into Western Canada in 1921 to every car of Canadian grapes. That is not a very healthy condition, and it is something we want to get away from as soon as we can. One of the things that will help us get the Western market back is cold storage facilities in the Niagara Peninsula. Both companies are working along the same line in harmony, and I believe the two companies will be two of the strongest co-operative companies in Canada, financially and as far as membership is concerned. We have only been operating fifteen months, and the first year we handled 410 cars and 754 in 1921. We have used the American market to a great extent in the past two years, but we feel the American market will not always be there, and we are anxious to develop the Canadian market as much as possible.

The growers apparently are well satisfied with our operations this year, and many men who did not belong to the company are joining with us and putting their grapes through our association, and I feel that in another year or two the Niagara District Grape Growers will be 100% strong.

We use the standard Canadian package, a six-quart basket, for which we get the same price on the American market as the Americans get for their four-quart baskets. If we had a standard package between the two countries it would make a big difference to the grape growers.

THE CHAIRMAN: In reference to the remarks of the Hon. Mr. Doherty, Minister of Agriculture, we appreciate very, very much the proposition Mr. Doherty has made, but the executive feel that we have not the time to take up a discussion on the point here, and we have recommended the appointment of a committee to consider the matter. Mr. Fairbairn has a motion covering this, and I will ask him to present it.

MR. FAIRBAIRN: We listened with interest and pleasure to Mr. Doherty this morning. It seems to me not only in the best interests of this meeting and of the fruit growers generally, but also in the best interests of the scheme which the Minister proposed, that a committee from this meeting be appointed to confer with Mr. Doherty and possibly also with the Dominion Minister of Agriculture, Mr. Motherwell, on the matter. I will, therefore, move that the following committee be appointed to confer with Hon. Mr. Doherty on the proposed aid relating to Central Packing Houses, and also to take up with the Hon. Mr. Motherwell the matter of assistance in financing Cold Storage Warehouses: Mr. Fisher, Burlington; Col. Roberts, Grimsby; Mr. Palmer, Vineland; Mr. Johnson, Simcoe; Mr. Craise, St. Catharines; Mr. W. H. Gibson, Newcastle.

This resolution, seconded by Mr. Grierson, was carried unanimously.

THE NORFOLK FRUIT GROWERS' ASSOCIATION.

J. E. JOHNSON, SIMCOE.

Your secretary has placed my name on the programme to talk to you a few minutes on the success of the Norfolk Fruit Growers' Association.

This association was organized sixteen years ago, appointing myself as manager and secretary-treasurer, which position I still hold. I might say that we have had sixteen successful years for the apple growers, besides making Norfolk County famous as an apple growing county.

Our success is due to education, publicity, and co-operation.

Education.

When we organized in 1906 we began to hold educational fruit growers meetings in different parts of the county, assisted by the Provincial Department of Agriculture. The success or failure of a fruit grower's association depends a great deal on quality. Our aim being success, we realized the importance of producing good quality fruit. In 1908 we co-operated with the Department of Agriculture and made personal visits with every member of the association, talking over with them the best way to care for their orchards, besides, apple grower's meetings were held in many parts of the County of Norfolk.

It is useless for me to take up time in dealing with the many problems of education which we carried on in caring for the orchards.

Publicity.

Publicity was our greatest asset after we had produced quality apples. The press took a great pride in using a considerable amount of printer's ink in the advertising of Norfolk apples which in return, was also a great encouragement to our growers. In short, the press, and rightly so, put Norfolk on the map as a county well adapted for the successful growing of summer, fall, and winter apples.

Co-operation.

Each for all and all for each carried on under good management must succeed. I have had the opportunity of personally gathering information from many of the largest co-operative societies in America. We also read of the great success of co-operative associations across the Atlantic. I believe it would be far easier to manage a co-operative association in Denmark, as there for generations they have been doing business under strict rules which make it necessary that all merchantable produce grown by the producers must be turned into the association.

We are always told by selfish interests in Ontario when we organize a co-operative association "Oh, they will soon go out of business, they cannot last." This was the case in Norfolk. The apple dealers who had previously bought apples from our Norfolk growers for 50c. to $1.00 per barrel would tell our growers all sorts of things to try to discourage them. Their two greatest assertions were "Spraying would kill their trees" as one of our rules was "The members must spray." Another, "The manager cannot get as much for the apples as he could afford to pay the farmer." I have been in places (but not in Norfolk County) where this line of talk had the desired effect, as in many places the grower's main object is to get more for his produce than his neighbour so he can make himself believe that he is a better business man. Jealousy amongst the producers has cost this country millions of dollars.

There is no way produce can be handled to better advantage than by co-operation, and be in a position to purchase supplies for the growing of the crops at the minimum price and selling the produce at the maximum price which will encourage production. This is the solution for the lowering of our taxes.

I feel a little timid in talking on management of a co-operative association but I am going to give you my personal ideas.

The manager must be a big man and the larger the association the broader ideas he must possess. Therefore, the members of a co-operative association must first make up their minds to secure a capable manager and that they are willing to pay him a good remuneration for his services. There have been more associations fail by having a manager not big enough for the job than from any other cause.

Now we will return to Norfolk and deal with our small association, the Norfolk Fruit Growers, which does not require a big man. Our members are all Norfolk boosters and rightly so, because they have something to boost for. They have handled successfully sixteen crops of apples on the plan of each for all and all for each. There is no jealousy there. We are all jolly good fellows, each one believing that in a few years Norfolk will be the greatest county in Canada and his ambition is to do his best to make it so. Our greatest asset to co-operation is kind thoughts for one another.

We can only attain our objective by co-operation. Come to Norfolk, where we handle all kinds of produce co-operatively. We will make you feel at home by telling you everything we know, believing that frankness is our strongest argument in our efforts to secure your confidence.

This is our co-operative platform in Norfolk County.

OUR GRADING, PACKING AND PACKAGES.

Specific National Grades for Apples. Box and Barrel Grade Names. Shall we adopt the Western Grades for Boxes only?

Mr. Baxter: The subject of grades for apples opens up a very wide subject, and I do not know whether you have the time or inclination to discuss it. I think the differentiation of grade names between boxes and barrels is perhaps more important.

The Chairman: That is what I think.

Mr. Baxter: I might explain briefly that this subject refers to a specific interpretation of the present grade definitions; in other words: that the size be determined in inches and the colour in percentages. My personal opinion is that so long as we have one grading law for the Dominion of Canada, it is not desirable that we make any changes in the No. 1 and No. 2 grades, but I think it would be to the interest of the industry if you should give a definite opinion as to the grades.

With respect to differentiation in grade names as between boxes and barrels, this, I believe, will be one of the most important questions discussed at the Dominion Conference. Our Commissioner in the United Kingdom sometime ago issued a report to the effect that Canadian exporters of boxed apples were losing money by reason of the fact that their apples were graded 1, 2, and 3, and they came in competition with the North-western States apples which were graded fancy, extra fancy and choice. That report has been given publicity and our friends in British Columbia, who are in the boxed package altogether, have taken the matter up, and at their recent convention they passed a resolution that the grade names be changed, and that we adopt the fancy, extra fancy and choice for boxed varieties only. That, of course, involves a new definition, probably, for the quality which shall be packed in boxes. I asked the Commissioner if he would prepare a memorandum in support of his contention that we were losing money by reason of this fact, and he has been good enough to do so. I have that report with me, and if it is the wish of this meeting, I will read it because it gives a clear description of the situation in the markets of the United Kingdom, and will give the members of this Association an opportunity of expressing their

opinion to the delegates who come to Ottawa, because I am sure the British Columbia representatives intend to put forth every effort to have this change made. I cannot give you my own opinion, because I have not had the privilege of watching the results of our marketing in the Old Country, but I am prepared to accept Mr. Forsyth Smith's opinion without question:

Case for Adopting American Grades and Grade Names for Canadian Boxed Apples.

1. United Kingdom importers are practically unanimous in holding the view that Canadian boxed apples are seriously handicapped in competition with their competitors from Washington and Oregon, by their grade nomenclature as No. 1, and No. 2.

2. The American grade names, Extra Fancy, Fancy and Choice, are all suggestive of excellence and quality, and tend to reinforce and direct the judgment of the buyers to the highest limit rendered possible by the actual quality as ascertained by inspection. Even No. 1, does not connote as high a degree of quality as Extra Fancy, and No. 2, and No. 3, definitely tend to suggest inferiority, which is most undesirable.

3. The boxed grades of Canadian apples are comparatively new on the market. The buyers have been familiar with the No. 1 and No. 2 barrel grades, and what they represent in quality and selection, for many years past. They inevitably tend to associate the boxed grades with the well-known barrel grades, to the decided disadvantage of the former. American boxed grades are under no such handicap. They have no association whatever with barrel grades.

4. The theory of the Canadian Sales and Inspection Act is that No. 1, and No. 2, apples as defined, are the same whether packed in boxes or in barrels. As the Act only indicates the minimum requirements, no account is taken of the fact that the grading standard for boxes must necessarily be higher than that for barrels, and no account is taken of the fact that a fair proportion of No. 1, barrel apples could not be packed at all in boxes as No. 1. Again, the Act clearly contemplates a definite distinction between the sizes graded as No. 1, and those graded as No. 2, and, in practice, this is the case with the barrel-packed apples, No. 2, always being so consistently smaller than No. 1, that, on this market, size is recognized as the principal distinguishing factor, and the only one that is commonly put forward when claims of misgrading are made. In the case of boxes, there is no such distinction until we approach sizes that would justify grading as No. 3, in barrels. Boxed apples are commonly packed as small as 200, in the No. 1. Grade, although in the case of most varieties, these are much smaller than "medium size for the variety." It would, however, clearly be unreasonable to insist upon a stricter interpretation of the Sales and Inspection Act, in view of the fact that these smaller sizes, if of prime quality, usually make higher prices on this, perhaps, the most important market of the future, than sizes 96 to 138, which, of course, are No. 1. sizes. The one outstanding distinguishing factor between No. 1, and No. 2, barrel apples is, therefore, not a factor at all, or one of negligible importance in distinguishing the two grades in the box pack. In other words, Boxed No.2, in spite of their being covered by the same legal definition, are not, and, under existing commercial conditions, cannot be, the same as barrelled No. 2's, and being essentially different, there is no good reason for retaining them in a category to which they do not actually belong, especially when this carries with it a suggestion of inferiority which is detrimental to their competitive situation on the market. The plain fact that will have to be faced by Canada sooner or later, is that boxed and barrelled apples are essentially different in their grading requirements, and should, therefore, be described by distinctive grade names, and by differing definitions, as is done in the United States. The American box and barrel grades developed separately, and each does the best for its own with outlet or hindrance. The Canadian grades were made for barrel apples, and have been applied to boxed apples, to which they are not adapted.

Assuming that it will be generally conceded that commercial and not scientific or pomological considerations must be the paramount factors in determining grading principles, the fundamental point must be realized that the conditions affecting the sales of barrel apples are and always must be different from those affecting sales of boxes. Small-sized barrel apples could not be sold at high prices. Small-sized boxed apples can and are. The preference for comparatively small sizes is inherent in the

box package and is due to conditions that apply to boxes and do not apply to barrels. It is not that the market prefers small sizes *per se*. Other things being equal, large sizes would be preferred. But, the higher standard of selection in boxes makes them more costly. The public cannot afford to buy large sizes in boxes except at a discount, as they would, otherwise, be paying too much per apple. They are willing to forego large size, in itself desirable, if they get quality in its stead, at a lower price per unit. They can afford to pay, and do pay a premium for large sizes in barrels. And if boxed apples could be offered at a price equal to or less than barrel apples per fruit unit, large boxed apples would also sell at a premium. In this connection, it is interesting to note, that, this year, as a result of the lower prices of boxed apples, much better relative prices have been paid for large sizes than in previous years of high-price boxes. These facts, in all, appear to point logically, to the necessity for separate and distinctive grades for distinctly different products, boxed and barrelled apples.

This, however, while so closely connected with the question of the change of box grade nomenclature as to be quite relevant in discussing it, raises a somewhat broader, and, probably, more controversial issue. It may also be objected that the size considerations mentioned do not apply to the home market, where the cost of boxed apples to the consumer is so much less than abroad that size preferences are reversed, and, size 138 is more desirable, and, if sold by count, as in England, would bring more money than 175, and where, in fact, the demand for large apples is probably very much the same whether they are packed in boxes or in barrels. It would appear, therefore, that immediate necessities would be met if present legal grades were retained as the minimum indications for both boxes and barrels, and it were enacted that, for boxes, the grade names, Extra Fancy, Fancy and Choice, should correspond to No. 1, No. 2, and No. 3, with the one modification of expressly, or, as at present, tacitly, permitting smaller sizes for export. Box shippers with the advantage of distinctive names for the distinctively higher grading that must necessarily characterize the box pack, could then proceed to make and maintain their own grading regulations at as high a level as those of their competitors, Washington and Oregon.

5. If the above recommendation is adopted, it will be necessary to raise the color requirements of No. 2 to equality with Washington and Oregon Fancy.

6. The trade of the United Kingdom is practically unanimous in holding that a change to American grading nomenclature would result in higher prices for British Columbia apples.

9. An importer calls attention to a point that is worthy of some consideration. A fair proportion of fruit is bought at auction by buyers, who are commissioned to buy by inland wholesales, who are either not members of the buyers associations, and, therefore, have not access to the salesrooms, or who cannot afford to take the time to be in personal attendance. These buyers give their orders by mail, and, as American box grades are long established on the market, they ask for Extra Fancy and Fancy. It would be quite impossible to substitute Canadian No. 2, for these requested Fancy, and so Canada loses this business.

10. It has been objected to the various considerations set forth above, that the Fruit Trade Commissioner has been emphatic in his declaration that the bidding at auctions is based upon judgments of quality and value formed after the most minute inspection of each particular lot offered for sale, and that, therefore, there is an element of inconsistency in insisting that grade nomenclature is more than of negligable importance in determining values. This inconsistency is more apparent than real. Nothing can alter the fact that, in the case of Fancy Grade inspected for the sale. the attractive names act as a plus force reinforcing the buyers' inspection judgment, while, in the case of No. 2, this designation is a minus force, working against it. The quality of remarkably good No. 2's would probably be able to prevail against this adverse influence. They would invite a particularly close inspection, and such inspection confirming first impressions, the influence of known quality would be stronger than that of nomenclature. Average or inferior No. 2's, would be passed over as devoid of particular interest, and the debasing effect of the No. 2 classifications would have full effect.

MR. FOSTER: Looking at this matter first-handed, without having time to think about it, it appears to me that the Canadian brands would be handicapped on the European market in competition with the American, and that is not a good position to be in. We certainly are entitled to get all the credit for our fruit, and all the money out of it that it is possible to get in an honest way. I do not

think it is a good thing to have too many brands or too many names, and I think it is worthy of great consideration as to whether a change should be made. Anything that will work out in the best interests of our fruit and its marketing is what we want.

THE CHAIRMAN: I think we are all prepared to leave our interests so far as this is concerned in the hands of our delegates, without any further discussion.

OUR FINANCIAL RETURNS.

INVESTIGATIONS INTO THE FRUIT INDUSTRY IN DURHAM COUNTY AND THE NIAGARA PENINSULA.

C. E. RILEY, O.A.C., GUELPH.

I do not propose to lead you through a maze of analytical figures in regard to the fruit business: I would rather discuss some of the general economic features as they exist at the present time. I notice on your programme that you have devoted time to the study of methods of controlling and handling those pests which affect your business; you have discussed methods of improving your crop; you even have discussed putting labels on your boxes to procure an extra 10c. for your product; but the ordinary farmer sows the grain on his land, looks up into the sky and prays that the Lord will send rain, and he is pretty well finished with it. I have never yet met a really successful fruit grower who was not always worrying about some problem in connection with his fruit growing business. There is an eternal fight to make a business out of it. Why do we have a business of that kind?

If we started away back at the beginning, we might find that the factor of land was the important thing. In the beginning of the history of Ontario, we had land in abundance with practically no value, except that land which might be easily cleared would be taken sooner than any other land. All land had practically an equal valuation for its ability to grow ordinary grain crops.

In certain sections, some person discovered the fact that he could grow apples, and he could make more money growing apples than growing grain, and he immediately raised the value of his farm, because it would produce more than his neighbour's would growing grain or other crops. Then his neighbour discovered he could grow apples, and that his land was as good as the first man's, so he raised the value of his farm. We have an example of that in the counties east of Toronto in the apple growing section where all land values are raised. The average land value in the survey which we made in Durham County of land without apples was $100 or $96 per acre; the fruit lands were valued at $184 per acre because they could produce larger revenues per acre.

In the first survey we had 165 farms of 125 acres each, of a total valuation of $16,000, making an average labour income of $896. We had thirty-five farms devoted to orchards, of an average of 110 acres; average value of each farm $184 per acre; average labour income $964, which is $68 higher labour income. Those men had increased their revenues by planting apples, but they had raised their land values so closely to the increase that to pay 5% on their investment a man was making practically the same thing in the old farming business as in the fruit growing business.

During 1919-1920 and 1920-1921, the period of deflation started. Increasing of land values is good while revenues are increasing, but in 1920 things began to look a little blacker for the fruit grower and for the farmer; the price of products dropped, and the costs of running his business if anything went up. We found that in 1920, that the mixed farmer instead of receiving interest on his money and a labour income of $896, had a minus labour income of $702, that is these 165 farmers in Durham County who were not growing apples had nearly $1,600 of a drop. The apple growers had a labour income of $298; they survived that deflation period a little better.

That drop of $1,600 might be represented by four things: Two things wiped out the labour income of $896 received in 1920; one was the decreased price of farm products that brought the average returns down to about $500, and the increased cost wiped out the balance. The minus $700 was made up in writing off the inventory; values of livestock dropped; values of feed and supplies dropped. Fruit growers did not have such a large amount of stock on hand, and they did not have that deflation in their inventory; apple prices were maintained fairly well, as a matter of fact they increased in 1920.

Apples in 1919-1920 sold at $3.63; the average cost of producing them was $4.17. In the following year, the selling price was $4.02, and the cost of production $4.84, showing an increase not only in price but an increase in cost resulting in a decrease of their profits, but they survived that fairly well. The business should be down pretty well to the bottom now.

With regard to the Niagara district, we have probably the greatest example in Ontario of increased values in farm land. Those old farms once had the same values as any other farms, but we have prosperity in the Niagara district—or evidence of it at least—that is not equalled in any other part of Ontario in agricultural lines. We have farms there worth five and ten times the market value placed on them. Improvements of all kinds have been made possible by that increase in value, which is due to the fact that somebody could grow fruit there and make a profit on it.

Land is different from any other kind of capital in existence; there is a possibility that land will increase in value. That is a speculative element.

There is another big speculation in the fruit business, and that is in the business itself. In ordinary farming their returns range from zero to $3,000 or $4,000, with farms all the way in between. In fruit growing sections, you will find a group of say fifteen farmers with incomes quite low and fifteen others with incomes quite high, and there is practically no intermediate stage, which indicates a speculative business. That speculative element can be to a certain extent overcome by a diversity of business, to cover the greatest possible number of sources of revenue.

We found with a yield of under twenty barrels per acre, the cost of producing a barrel of apples was $6.48: where the yield was from twenty to forty barrels per acre the cost was $5.36; over forty barrels, $3.76, allowing the owner wages and interest on his money. We found the man with the low yields spent $7.60 per acre for labour, or $23.00 per acre of orchard land. We find the man with the high yields spent $11 for every acre in his farm, or $68 for every acre of orchard which he had. $23 yielded under twenty barrels of apples; $68 yielded practically three times as much money. More money spent for labour resulted in cutting the cost practically in half by increasing the yield. That is an important factor.

With regard to our tomato investigations, although the average cost might indicate a loss figuring interest and labour, yet, we find that where a reasonably large amount of money and labour were expended on the crop, it proved profitable. There is one thing in connection with those costs that has to be borne in mind: farm costs vary from other manufacturing costs in that so much of it may be made up of the owner's own labour and his own capital. We find that the tomato growers where the cost, figured on a basis of interest, labour and all expenses, amounts to 90c. a bushel, had sufficient out of 50c. to pay all direct cash expenses. We find the average man in growing tomatoes paid all his expenses, had 30c. for labour and 3.1% interest on his investment.

Studying the returns in other sections of the Niagara district, although we found the average returns to be fairly uniform in each section, yet we found in St. Catharines, for instance, an average labour income of $2,000 for 1920. We found the best 25% of these men making $6,000 labour income, and the poorest 25% making minus $1,000. There is a difference of $7,000 between the best culture and the poorest culture. Around Jordan and Vineland we found the largest profits were made on those farms where a large amount of small fruit and grapes were grown. Around Beamsville on those little farms, we could not find any apparent cause for the difference in income, until we began studying the personal factor.

We divided the farms up according to the years that the men had spent on those farms, and we discovered a very important factor in connection with the success of the fruit business. We had twenty-two farms on which men had spent less than two years, with an average size of thirteen acres, and an average labour income of $503—39% adjusted labour income. Adjusted labour income means adjusted by size; men are buying smaller farms than they were fifteen or twenty years ago, on account of the price, so that these farms were not uniform in size, and we had to average them, taking 100 acres as the average size. Men who had from two to five years' experience, their labour income was 87% of the averago: men on the farm for six to ten years had a labour income slightly above the average, 106%. Men on farms over twenty years had an adjusted labour income of 127%, or 27% better than the average. We had fifteen old homestead farms, farms run by young men, some of them graduates of the colleges, averaging thirty-three years of age. There were two generations of experience in the fruit growing business there, and their adjusted labour incomes was 157%, or 57% better than the average man. Their average was $3,966 actual labour income. Inexperience gave 39% income: two generations of experience gave 157%, a difference of 118% due to experience.

There are a number of ways of improving the fruit growing business. The easiest way is to improve your markets and raise the price. Another way is to reduce the cost, and you can do that by cutting expenses, or increasing expenses and increasing the returns.

In all the work we have done in the fruit growing business, we have found the increasing of the yields to be the essential thing. I do not want to leave any wrong impressions with you. I think I have made it clear that for the average man, the fruit growing business offers the same opportunity as any other business. If he has no experience he will fail to a greater extent than in any other kind of farming; if he is a good man he will make more money in the fruit business than in any other kind of farming, and there is probably no department in our agricultural development that requires so much experience, so much knowledge and so much study as the fruit growing business.

THE FUTURE OF FRUIT GROWING IN ONTARIO.

J. W. Crow, Professor of Horticulture, O.A.C., Guelph.

The Province of Ontario possesses natural advantages for fruit growing which, I fear, are not fully recognized, even by ourselves, and which in some respects are not surpassed by those of any State or Province on the continent. Our climate, soil and location with respect to markets are so much more favorable than those enjoyed by any of our competitors as to make our continuance in the business certain. Fruit growing ought to be, and eventually will be, a far more important source of revenue than it is to-day and the advantages I shall attempt to outline are in my judgment actual and real.

It is not generally realized that in our inland location, a thousand miles from seaboard, and lying between latitudes 42° and 45° we nevertheless possess extensive areas of good fruit soil ranging in altitude as low as 250 feet above sea level. We possess a summer season long enough and warm enough to mature properly any variety of apple, pear, plum, cherry or peach which can be grown anywhere on this continent. We possess a winter season moderately cold but steady and on the whole our climate is singularly free from the extreme changes of temperature common to other inland regions and characteristic of almost all of the commercial fruit districts of America. We derive a greater benefit from the modifying effect of the Great Lakes upon temperature, snowfall and humidity than any of the states lying adjacent thereto. Our summer season has sufficient rainfall and is sufficiently free from periods of extreme heat to bring strawberries to a high state of perfection with most creditable yields. Raspberries, currants, gooseberries and grapes are likewise grown to perfection.

Our local topography is in some cases of such a nature as to secure for us the maximum benefit of our favorable latitude and low altitude. The fruit belt proper of the Niagara district in Ontario holds the record, I believe, for continuous commercial crop production. The only complete peach failure known in this district occurred in the year 1914. So far as I am aware no commercial peach district in North America can equal this record. The explanation lies in the fact that our winter is sufficiently steady to keep the buds dormant and to prevent the mid-winter advances which are common and disastrous in other peach districts, not excepting even those of Georgia or California. I have no doubt the same condition pertains at least in some measure to plums and cherries also, as they are likewise easily damaged by cold weather following mild periods in winter.

In general I believe careful observation would establish the fact that fruit trees in our climate bear more heavily than they do farther south; also, that they are longer lived and more vigorous. Fruit trees in the north require less heat to bring them into bloom, and I am inclined to the view that the heavier bearing of trees in the north may be due to the extraordinary vigor of early spring growth in our climate. In this connection it may be pointed out that the comparative coldness of our winter may be a blessing in disguise. Freezing is well known to have the effect of shortening the rest period of hardy plants and there is in my mind no doubt that the resulting vigor of growth may have an important effect upon bud formation. In this connection I beg leave to refer you to another paper written for this convention and dealing with early spring growth conditions as related to fruitfulness.

It should be remarked also that the climate of the Province of Ontario is remarkably free from frosts in the growing season. There are important fruit

districts lying a thousand miles nearer the equator than we are in which frost fighting apparatus forms an essential part of orchard equipment. A total crop failure among tree fruits due to frosts at blossom time is almost unknown in this Province.

With respect to markets I am very glad indeed that this subject is now beginning to receive the attention it has long merited. It would appear that there is no lack of markets for high grade fruit, although there is still much to be done in the direction of organizing for efficient marketing. It might be well to bear in mind that there is and can be no profitable market for poor fruit and in this sense it seems to me impossible to draw a line between activities which relate to marketing and those which relate to the production of fruit of sufficiently high grade to be worth marketing.

That fruit growing is a profitable line of industry is, I believe, very plainly brought out in connection with Professor Leitch's surveys conducted in the Niagara District and in Durham County. Land values for fruit growing purposes are still rising. Particularly is this true in apple growing, and this industry offers unusual opportunities to skilled men.

The fruit industry in the Niagara Peninsula shows a record of almost continuous expansion from 1896 down to the present. This has been brought about by improvement in transportation facilities, in marketing methods and in grading and packing the product. Throughout the apple districts, however, there has been very little commercial planting since 1912, with very heavy losses from winter killing occurring in 1913-14 and again in 1917-18. The extent of the losses in the latter winter amounted to nothing less than a national calamity and would, no doubt, total one-quarter or one-third of the commercial bearing trees of the Province. It might be mentioned here that losses from this cause are preventable for it is surely possible to propagate our fruit trees upon hardy roots. Efforts in this direction should be undertaken without delay.

The small farm orchard which formerly produced the bulk of the commercial crop is, in my judgment, a thing of the past and while there will be, no doubt, in future many apple orchards operated as side lines on mixed farms we need more large orchards operated by specialists. The prospects for apple growing were never brighter in Ontario than they are to-day, but if the industry is to prosper the orchard must be looked after in poor years as well as in good years. Small orchards are certain to be neglected in poor years. We need orchards of from twenty to fifty acres—the more the better.

There is much discussion with regard to the most suitable varieties, and a great lack of information concerning several which have been suggested. In my judgment one of the most regretable occurrences was the discontinuation of the Fruit Experiment Stations which for many years furnished reliable information on varieties for the several districts. There are, nevertheless, dependable varieties for every district. It will probably be many years before we can supersede the Spy as a late keeping winter apple of high quality and while in general I do not consider the Spy as the most profitable variety which could be grown I feel very certain that we are not yet making the most of its valuable qualities. The Spy is certainly a box apple, second to none in its season, the most serious objection urged against it being that it produces too many low grade fruits. In my judgment here is a problem to be solved only by hand thinning of fruit on the tree. The Wealthy, Snow and McIntosh cannot be excelled as box apples in their proper seasons.

The future of the fruit growing industry in this Province will be entirely what we make it. Prof. Leitch's survey results show that an orchard properly taken care of pays well, and that a neglected orchard is a cause of loss. In other words, profit in fruit growing is a matter of spending money in order to make money. I believe the fruit grower is anxious to learn of better methods, and I believe further that so far as educational agencies are concerned the problem is to show him how to invest his time and money to best advantage in caring for his orchard.

RESOLUTIONS.

The following resolutions were adopted:

1. That a committee be appointed to bring before the proper authorities the desirability of having the duty removed on miscible oils.

2. That this Convention of the Ontario Fruit Growers' Association hereby petition the Federal Department of Agriculture to change the regulations with regard to Government assistance towards the establishment of cold storage warehouses, so that such assistance may be available for co-operative marketing companies as well as municipalities.

3. That the following resolution from the Clarkson Association be approved and forwarded to the local associations in the Niagara District for joint action: That the Clarkson Fruit Growers' Association are opposed to the present rate of commission charged by commission merchants, and asks that such rate be lowered, and that a copy of this resolution be sent to the Secretary of the Ontario Fruit Growers' Association."

4. That this Convention approve of the proposed formation of a national Horticultural Council as outlined by Mr. C. W. Baxter.

5. That the President and Secretary be appointed to meet representatives from other horticultural bodies in reference to a National Show and Association.

6. We, the Ontario Fruit Growers' Association, are convinced that the present condition of the apple-growing industry merits the careful consideration of this Association: that the question of desirable varieties for planting in the various districts of the Province is one of great importance: that so many new and uncommon varieties are being offered and the present list does not entirely meet the requirements for hardy and late-keeping varieties demanded for export trade; that the experimental orchards at the Ontario Agricultural College, Guelph, and at the Central Experimental Farm, Ottawa, are both situated in districts having very severe winters and are therefore handicapped on account of their location, and the Experimental Station at Vineland is located in a district having a much milder climate but has not the space to devote to extensive varietal tests.

Therefore be it resolved that we petition the Minister of Agriculture for Ontario to take the necessary steps to establish a permanent testing station at some suitable point in one of the principal apple-growing districts not now served by any experiment station, so that the many varieties grown at the present time, and especially those which seem to be of promise for Ontario conditions, may be thoroughly tested, and so new varieties may undergo reliable tests before being recommended or planted. We would point out that such a station would greatly assist the apple growers of Ontario, and encourage the early planting of desirable varieties.

Ontario Department of Agriculture

ANNUAL REPORT

OF THE

STATISTICS BRANCH

1921

PART I.—AGRICULTURAL STATISTICS
PART II.—CHATTEL MORTGAGES

PRINTED BY ORDER OF
THE LEGISLATIVE ASSEMBLY OF ONTARIO

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1922

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To His Honour HENRY COCKSHUTT,

Lieutenant-Governor of the Province of Ontario, etc., etc.

MAY IT PLEASE YOUR HONOUR:

I have the honour to present herewith for your consideration the report of the Statistics Branch of the Ontario Department of Agriculture for the year 1921.

Respectfully yours,

MANNING W. DOHERTY,

Minister of Agriculture.

TORONTO, 1922.

Statistics Branch of Agriculture

PART I—AGRICULTURAL STATISTICS

THE WEATHER.

TEMPERATURE.—The following table gives the temperature of the Province for each month during the last five years, together with the mean annual temperature, also the mean temperature for the six months, April-September, practically the growing season, together with the average for the five years, 1917-1921, and the forty years, 1882-1921.

Months.	1921	1920	1919	1918	1917	1917–1921	1882–1921
	°	°	°	°	°	°	°
January	23.0	7.8	24.5	8.5	17.8	16.3	18.0
February	23.6	15.8	23.7	16.5	12.3	18.4	17.4
March	35.8	31.2	30.7	31.1	29.6	31.7	27.2
April	47.9	38.9	41.0	42.7	40.2	42.1	41.8
May	57.2	53.4	53.9	57.2	48.2	54.0	53.8
June	66.0	64.9	71.1	61.2	60.7	65.0	63.6
July	75.4	65.0	71.3	68.2	69.5	69.9	68.4
August	65.9	68.0	66.3	69.4	66.4	67.2	65.7
September	64.5	61.9	61.2	54.3	57.3	59.8	59.3
October	48.0	54.1	50.1	49.9	42.5	48.9	47.5
November	32.9	34.3	34.4	39.3	32.0	34.6	35.2
December	24.1	27.2	17.9	27.7	14.8	22.3	23.5
Annual mean	47.0	43.6	45.5	43.8	40.9	44.2	43.5
Mean for six months, April to September	62.8	58.7	60.8	58.8	57.1	59.6	58.8

The mean temperature for 1921 was 47.0 degrees, or 3.4 degrees warmer than the preceding year, and 3.5 degrees above the normal for the forty years, 1882-1921.

The mean for the six months, April-September, was 4.1 degrees warmer than the preceding year, and exactly 4.0 degrees above the forty year normal.

November was the only month that did not exceed its normal, being 2.3 degrees below. March was the warmest relatively, being 8.6 degrees above.

SUNSHINE.—In the following table the averages of sunshine are derived from the records of the weather stations at Woodstock, Toronto, Lindsay, Kingston and Ottawa.

Months.	Sun above horizon	1921	1920	1919	1918	1917	1917–1921	1882–1921
	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.
January	285.7	114.6	99.3	84.5	106.8	73.9	95.8	77.5
February	291.4	92.1	115.4	116.6	96.1	121.9	108.4	104.4
March	369.9	111.7	155.7	148.3	182.7	154.3	150.6	145.4
April	406.4	179.4	145.6	139.7	194.7	157.7	163.4	180.9
May	461.1	258.3	265.6	192.9	208.3	183.4	221.7	212.5
June	465.7	302.4	227.0	307.0	261.6	205.3	260.7	248.4
July	470.9	280.2	231.5	308.8	272.2	240.7	266.7	267.7
August	434.5	242.2	227.0	210.6	260.3	233.0	234.6	239.5
September	376.3	194.8	217.6	184.8	144.3	197.7	187.8	186.2
October	340.2	132.9	156.3	119.6	134.3	91.4	126.9	138.3
November	286.9	49.1	49.6	58.9	84.3	115.6	71.5	78.5
December	274.3	65.0	47.2	75.8	64.7	98.4	70.2	62.2
Total for the year	4,463.3	2,022.7	1,937.8	1,947.5	2,010.3	1,873.3	1,958.3	1,941.5
Total for six months, April-September	2,614.9	1,457.3	1,314.3	1,343.8	1,341.4	1,217.8	1,334.9	1,335.2

The year 1921 had 2,022.7 hours of sunshine, 81.2 hours more than the average for the last forty years. The six growing months April-September, had 1,457.3 hours or 122.1 hours more than the forty year period. Seven months were in excess and five were deficient, June with 54.0 hours above and March with 33.7 hours below, having the greatest departures.

PRECIPITATION.—The fall of both rain and snow for the five winter months, including November, 1920, and March, 1921, is given in the following table for five years, together with the average for the forty years, 1882-1921. One inch of water is equivalent to ten inches of snow.

Months.	1921	1920	1919	1918	1917	1917–1921	1882–1921
	in.	in.	in.	in.	in.	in.	in.
November:							
Rain	1.72	1.89	2.03	0.56	1.49	1.54	.....
Snow	10.1	7.2	3.1	7.0	6.8	6.9	.....
December:							
Rain	1.79	0.07	1.37	0.14	0.85	0.84	.....
Snow	16.3	14.1	15.4	20.4	16.6	16.6	.....
January:							
Rain	0.47	0.00	0.55	0.02	0.66	0.34	.....
Snow	7.5	20.1	11.4	28.9	20.3	17.6	.....
February:							
Rain	0.21	0.00	0.57	1.50	0.35	0.53	.....
Snow	13.3	14.8	9.6	17.2	14.0	13.8	.....
March:							
Rain	3.01	1.28	1.82	0.54	1.12	1.55	.....
Snow	4.4	7.3	11.6	10.6	14.8	9.7	.....
Five months:							
Rain	7.20	3.24	6.34	2.76	4.47	4.80	.....
Snow	51.6	63.5	51.1	84.1	72.5	64.6	.....

The total amount of rainfall for the five months was 7.20 inches, or 2.40 inches above the average for the forty years, 1882-1921.

The total amount of snowfall was 51.6 inches or 13.0 inches below normal. November was the only month above, being 3.2 inches, all the others were below, January especially having a deficiency of 10.1 inches.

The rainfall for the six months, April-September, comprising what is regarded as the growing season for most crops is given in the following table, covering the last five years, 1917-1921, and the normal for the forty years, 1882-1921.

Months.	1921	1920	1919	1918	1917	1917-1921	1882-1921
	in.	in.	in.	in.	in.	in.	in.
April	2.92	2.31	2.53	1.38	2.23	2.27	1.85
May	2.05	0.82	4.24	2.62	2.42	2.43	2.80
June	2.13	2.85	2.26	2.69	3.79	2.74	2.75
July	3.64	3.56	2.16	2.18	3.49	3.01	2.66
August	2.49	2.13	2.95	2.94	2.83	2.67	2.67
September	2.76	2.43	2.88	4.31	1.40	2.76	2.63
Total for six months	15.99	14.10	17.02	16.12	16.16	15.88	15.36

The rainfall for the six months, April-September, was 15.99 inches, or 1.89 inch more than the preceding year, and in comparison with the normal for the forty years, it was 0.63 inches above.

Three months, April, July, and September, were above, and three were below, May, June and August their respective averages, the extremes being April 1.07 above and May 0.75 below.

SPRING WORK AND VEGETATION.

Several correspondents in April referred to the very early ploughing done, some claiming that no such record had been made for twenty years. A number of farmers took advantage of the good tilth of the soil to do some early "seeding down" with grain.

The May bulletin said:—"Spring seeding covered about six weeks, an unusually long period for this work. Considerable grain was got in by the middle of April in some of the Lake Erie counties, as the soil was in good tilth and the weather was then most favorable. Cold and wet weather ensued, followed by hot days that baked heavy soils and hindred growth. Some seed sown early rotted in the ground, or otherwise did so poorly that considerable resowing was necessary. While a number of fields of spring grain are now exhibiting a nice top, others are only just beginning to show up. In the opinion of correspondents the acreage in crop this season is likely to be less than usual with the exception of oats, corn, and perhaps peas. Spring wheat has fallen off in popularity more than any other crop, and potatoes are also out of favour. Owing to the drop in the price of sugar, there is also likely to be a shrinkage in the acreage of sugar beets. Corn and roots are now being rushed in."

STATISTICS OF FARM CROPS.

Field Crops.	Acres.	Production.	Bushels per acre.	Market Value.	
				Total.	Per acre
		bush.	bush.	$	$ c.
Fall Wheat	621,420	13,667,879	22.0	15,096,980	24.29
Spring Wheat	152,904	1,907,459	12.5	2,087,264	13.65
Barley	462,176	10,149,353	22.0	6,665,855	14.42
Oats	3,094,958	72,575,191	23.4	36,555,194	11.81
Peas	105,964	1,441,095	13.6	2,205,423	20.81
Beans	26,509	427,531	16.1	1,005,057	37.91
Rye	122,868	1,775,599	14.5	1,467,086	11.94
Buckwheat	147,944	3,354,201	22.7	2,482,999	16.78
Flax	7,534	66,748	8.9	130,995	17.39
Corn (in the ear)	250,684	20,313,661	81.0	8,012,455	31.96
Potatoes	164,096	15,400,142	93.8	13,589,599	82.81
Carrots	2,217	410,501	185.0	112,888	50.92
Mangels	31,225	11,909,854	381.0	3,275,210	104.89
Turnips	70,715	24,265,547	343.0	6,673,025	94.37
Sugar Beets	28,367	10,712,975	378.0	2,946,068	103.86
Mixed Grains	618,289	16,188,510	26.2	10,579,352	17.11
		Tons	Tons		
Corn (for silo) green	438,343	5,015,082	11.44	25,075,410	57.20
Hay and Clover	3,551,655	3,954,166	1.11	76,193,216	21.45
Alfalfa	177,205	456,378	2.58	8,023,795	45.28
Totals—					
1921	10,075,073			222,177,881	22.05
1920	10,108,272			367,608,619	36.37
1919	9,915,884			397,238,400	40.06
1918	9,992,825			363,909,778	36.42
1917	9,718,259			333,353,438	34.30
1916	9,548,876			223,748,948	23.43
1915	9,762,951			210,674,415	21.58
1914	9,621,444			199,152,945	20.70
1913	9,541,537			168,455,253	17.65
1912	9,574,474			185,790,341	19.40
1911	9,718,741			179,974,358	18.52

The acreages devoted to other crops in 1921 were as follows:—Orchards, 242,921; small fruits, 26,175; summer fallow, 260,277; pasture (cleared) 3,401,998.

Ratios of Areas under Crop.—The following table shows the number of acres under the various crops in 1920 and 1921 per 1000 acres of cleared land, together with annual averages for various periods.

Year	Fall Wheat	Spring Wheat.	Barley.	Oats.	Peas.	Beans.	Rye.	Buck-wheat.	Corn.	Potatoes.	*Roots.	Hay and Clover.	Mixed Grains.
1921	41.4	10.2	30.8	206.1	7.1	1.8	8.2	9.9	45.9	10.9	8.8	236.5	41.2
1920	51.0	17.9	32.4	192.5	7.3	1.5	8.9	9.6	46.3	10.5	10.4	247.1	38.9
Annual average:													
1912–1921	44.5	13.4	38.4	189.9	9.1	4.0	9.0	12.9	46.6	10.8	11.0	237.5	35.6
1902–1911	51.3	13.0	50.7	192.8	27.7	3.6	8.0	9.4	40.1	10.9	15.8	219.0	†33.1
1892–1901	73.2	28.0	39.2	180.2	60.5	4.1	10.1	10.3	35.5	12.9	15.6	198.2	.....
1882–1891	81.6	50.9	67.2	150.4	60.5	2.4	9.4	6.2	17.7	14.0	12.2	207.1	.....
1882–1921	61.5	24.8	48.1	179.9	37.6	3.6	9.1	9.9	36.1	12.1	14.5	216.4	‡38.1

*Mangels, turnips, carrots and sugar beets. †1907–1911. ‡1907–1921.

THE GRAIN CROPS.

Fall Wheat.—Returns made in November, 1920, regarding the condition of the newly planted fall wheat were thus summarized:—"The acreage of fall wheat sown is about one-seventh less than that of last year, the falling off being chiefly in the larger wheat-growing counties of the Lake Erie district. On account of the dry condition of the soil at the usual time of seeding, and also to escape injury from the Hessian fly, a large area went in much later than usual. Sowing ranged from the last week of August to the first week of October, the bulk being got in between the 6th and the 20th September. The early growth was rather checked by drought, but October weather brought it along with a bound, and on the whole the crop will enter the winter with a good top. Some early sown fields have been attacked by the fly. Dawson's Golden Chaff is the variety chiefly grown."

The crop bulletin issued in the succeeding April, contained the following:—"The acreage of fall wheat now growing is about fifteen per cent. less than that of the previous year. Much of it was sown later than usual, largely because of the dry weather prevailing at the beginning of the regular seeding time, and also to avoid injury from the Hessian fly. The crop, generally speaking, entered the winter with a fair top, although a few fields looked a bit backward. It was thought that the unusual absence of snow, which in most of the fall wheat sections meant practically bare fields for a considerable portion of the winter, would be hard on the young crop, but for the most part it came through in good shape, and is now looking very promising, taking the situation generally. Of course the danger of injury from spring frosts and heaving is it not yet past. Odd mention only is made of damage by the Hessian fly."

The May bulletin said:—"The April crop bulletin placed the area of fall wheat at about one-seventh less than that of the preceding year, and spoke favorably of the prospects of most of the crop. There has not been much change in the outlook, and at present a fair yield is promised, especially in the Lake Erie counties, where the bulk of our fall wheat is grown. In the eastern part of the Province, where the acreage is comparatively small, the crop has not done very well. Taking the Province over, the area of fall wheat plowed up or resown with barley or other grains will not be over ten per cent. of that put in last fall. Drouth was affecting the crop as the bulk of correspondence wrote, but late reports spoke of welcome rains giving the fields a fresh start. Insect injuries have not been serious so far."

August reports concerning the crop were as follows:—"Fall wheat came through the winter and spring in fairly good condition. It withstood the May and June drouth remarkably well, the main effect of the unusually dry and warm weather being to hasten ripening, more or less at the expense of the length of straw. The grain, however, threshed out fully an average yield, and is of good weight as a rule, although some correspondents speak of it as failing to match the measured bushel. A few farmers had yields running up to fifty bushels or over. Cutting ranged from 4th to the 20th of July, the bulk of the crop being harvested by the 15th under generally favorable conditions. A few complaints were made of injury by Hessian fly. There were also odd reports of smut."

The bulk of the December reports described the yield and quality of fall wheat as favorable, the crop being relatively the best of the cereals, although much of the grain, owing to the heat and drought just before ripening, was hardly up to standard weight. The straw also was short from the same cause. The crops suffered but slightly from the Hessian fly or other insects.

The December bulletin thus described the newly planted wheat:—"The acreage of wheat sown this fall is larger than that of last year. Sowing ranged from August 20th to October 12th. Much of it was put in late to avoid the Hessian fly. The land was in good condition to receive the seed, generally speaking, especially on summer fallow, and the young wheat made a good start. Some early sown was said to have too much top, and some fields look rather yellow, but as a whole the crop is likely to enter the winter in very fair shape. A few complaints have been made of injury by Hessian fly, and there is odd mention of wire worm. Dawson's Golden Chaff is the variety most largely grown.

Spring Wheat.—"This cereal, which nearly doubled its acreage in 1918, and slightly increased that area in 1919, is likely to again fall away in popularity as compared with winter wheat," said the August bulletin. This year's experience has been a most disappointing one, the hot dry weather having been too much for it. The average yield per acre is only about three-fifths that of the fall sown variety. Like all the other spring grains the straw is short. A little rust has been reported. Cutting began about the 11th of July and extended to the end of the month."

December returns regarding spring wheat were to the effect that the crop was decreasing in favour, after a revival of popularity during the preceding three years. The average yield per acre was but little better than half that of fall wheat. The straw also was short.

Barley.—Following is a summary of the August returns:—"Like the other spring grains barley suffered from too much rain at seeding. This followed by dry and unusually warm weather, severely tested the crop, the result being a shortness in the length of the straw, a lack of filling in the heads, a lightness in yield and a disappointing crop generally. A correspondent in Lennox complained of some of the grain being 'shoe-peggy.' Considerable of this crop is now sown with oats for mixed grain. Just before harvesting, many fields were knocked down by rain and wind storms. Cutting covered the same period as that of spring wheat."

The December bulletin ranked the barley crop as a comparative failure in saying:—"This has been one of the poorest years for barley. The drought told greatly against the plumpness of the grain, some of which weighed only forty pounds to the measured bushel, and the straw was of poor length, though clean. Of course here and there some good fields were to be found. The sample was generally of good color, but most of this grain is now fed on the farm."

Oats.—The following regarding oats appeared in the August bulletin:—"This crop, which has an acreage fully one-half larger than that of the other grain crops combined, has had one of the worst years yet reported so far as yield per acre, shortness of straw, and general condition is concerned. There is an unusually large number of reports of poorly filled heads and light weight grain, the result mainly of the unusually prolonged hot spell in the early part of the summer. There are a few complaints of rust and of grasshoppers. There are also odd reports of some fields making second growth. An Essex correspondent claims that oats did best on drained land this year. In many quarters the fields were badly flattened by heavy storms late in the season. A number of fields had to be cut with a mower, and several correspondents report that some grain yet remains uncut and may not be gathered for the general threshing. Harvesting began about the middle of July and was common about the end of the month, an unusually early period for oats.

The December bulletin had the following discouraging reference to the yield and quality of oats:—"The oat crop, also, has seen one of its worst seasons. The average yield per acre was only slightly over one-half that of the preceding year, and the total yield was about 57,000,000 bushels below that of 1920. The quality of the grain is also very disappointing, some of it running as low as twenty-eight pounds to the bushel, and several correspondents say that some fields have not been cut for threshing, as the crop would yield but little more than hulls. As in the case of the other grain crops the straw was of poor length. Some rust was complained of, but there was less than usual.

Rye.—This crop is not grown largely for grain, being preferred by many for soiling purposes. August reports said that winter rye has yielded fairly, although not relatively so well as fall wheat.

December reports were to the same effect.

Peas.—The following concerning peas appeared in the August bulletin: "This crop also is not so popular as formerly, except where grown for canners. The drouth and intense heat were very trying, ripening the pods too quickly, and the yield will be a relatively small one. Pulling ranged from the last week of july to the third week of August."

December statements were to the following effect: Peas are not now much raised for feeding live stock, but a number of farmers grow the crop for the canneries. The yield per acre was not up to the average, and the quality ranged from poor to good. Some of the crop took a second growth.

Buckwheat.—The acreage of buckwheat was slightly more than that of the preceding year. On the whole, the yield was fair, although some fields were patchy from drought. Some of the late grown was touched by frost in the eastern counties, but most of the crop was cut in time to escape injury.

Beans.—The August bulletin said: "Beans are not so much in favor as formerly, especially in those districts where they have been most largely grown. The crop was just about ready to harvest when returns were sent in. The general yield per acre will be below the average, although some fields are looking promising. The late planted as a rule have done best.

Correspondents had less than usual to say about beans in December. Those reporting spoke more or less favorably of the crop, which was harvested under satisfactory conditions.

Corn.—This now very important crop was thus described in the August bulletin: "Correspondents are practically unanimous in proclaiming corn to be the best crop of the season, both for the bin and for the silo, having withstood the unusual heat of the early part of the summer much better than any other field crop. The growth is much in advance of ordinary years, and already some of it is cut and in the silo. There are a few complaints of smut. The presence of the corn-borer in some of the southwestern counties has caused some anxiety among growers. Government officials are on the ground in some counties making careful investigations at first hand regarding this pest."

The December bulletin contained the following glowing report: "Taken all together a finer crop of corn was never cut in the Province than that gathered this season. The yield of stalk was large, and the number, size and quality of the ears were all that could be desired. The weather for silo filling was also most favorable. Correspondents, however, make mention of the presence of the corn earworm, which has done much injury to corn on the cob in a number of counties ranging from Kent to Hastings. The corn-borer also wrought considerable in-

jury to growing corn by attacking the stalks. Upon the discovery of these pests, practically new to this Province, Government entomologists were at once sent to investigate and report upon the situation."

HAY AND CLOVER.

The report concerning clover in the April bulletin ran as follows: "This crop has not come through the winter so well as fall wheat, although some very favorable reports of its present condition have been received. Considerable heaving has been reported on newly seeded fields, especially on heavy clays, but many farmers are helping to remedy matters by rolling the meadows. The crop looks unpromising on the low land."

May returns were to the following effect: "This crop has not done so well as fall wheat, spring injury being placed at from 15 to 20 per cent. the injury being chiefly from heaving. Where the fields were rolled much improvement was observed. Like fall wheat the crop presents a much better appearance in the western half of the Province compared with the eastern counties. Of course many excellent fields are to be found both east and west."

The August bulletin said: "The yield of hay has been very uneven, returns ranging from two tons to half a ton per acre. The western half of the Province, more especially the West Midland counties, generally speaking has done much better with all grass crops than the eastern and more northern districts. Cutting of clover began as early as June 20th, but the forced ripening of fall wheat and other grains made their harvesting overtake some of the haying, which had to be thrust aside for a while. The great heat of the early part of the summer was very trying to pastures. New meadows did much better than the old fields. Taken all together the crop will be below the average, although of good quality as a rule owing to favorable weather at the time of cutting and housing."

According to the December bulletin pastures were in good general condition during the fall. Correspondents differed, however, greatly as to the conditions and prospects of red clover seed. Some said that the heads were well filled with seed of good quality; others stated that the second growth was so poor for seed that cattle were turned on the fields. However, the later crop was relatively better than the first cutting.

Alfalfa.—The comparatively few references to this crop in the April reports were more favorable than those regarding clover.

The May bulletin said: "Alfalfa presents a better general appearance than red clover, having wintered much better, although it also has done comparatively poorly in the eastern part of the Province. The acreage is relatively small."

According to the August returns alfalfa had done much better relatively than red clover. The second cut was also turning out satisfactory; some regarded it as the best in years.

Several correspondents, writing for the December bulletin, spoke most favorably of alfalfa. Some had three good cuttings, while others had but two. The seed was of fairly good quality, but as in the case of all field crops the influence of the unusual drought was felt. More farmers are trying out alfalfa.

Alsike.—Where grown this crop has done fairly well for seed.

Sweet Clover.—More farmers are growing sweet clover than ever before. However, the individual acreages are as a rule not so large as those of last year, owing to the slump in the price of seed.

The December bulletin said: "Sweet clover is growing in popularity for pasture, more especially in western Ontario. It has not yielded well for seed this season, and prices offered by dealers have been disappointing."

POTATOES AND FIELD ROOTS.

Potatoes.—The August bulletin said: "The crop is regarded as practically a failure, for although a few growers are having satisfactory returns, the bulk of the fields, while having a fair show of stalks, have very few tubers to the hill. Drouth and the intense and prolonged heat are given as the chief causes, while some charge spring frosts with doing some of the damage. The crop is a poor one even in the northern districts."

The following regarding potatoes appeared in the December bulletin: "This crop on the whole has been a light one, some growers getting back little more than the seed, although some good yields were also reported. Drought and excessive heat were the chief drawbacks. The tubers were smaller in size than usual, generally speaking, but very little rot or scab has been reported. The most of the crop was got under cover in good weather."

Roots.—August returns regarding field roots were to the following effect: All classes of roots were regarded as having a poor start, as very dry warm weather prevailed at, and for some time after, seeding. Later rains, however, started growth nicely, and at present all classes of roots are more or less promising, although many fields have grown too weedy for the best results.

"Mangels are generally described as being from fair to good, having been greatly benefited by the recent rains.

"Sugar beets are said to be doing even better than mangels."

"Turnips suffered from the fly in some quarters, but on the whole will give a fair return should the weather continue favorable. A Victoria county correspondent says that some injury has been done to this crop by the root maggot."

The December bulletin had the following:—

"Turnips have not given general satisfaction. Lice did some injury, and the hot dry weather at one time prevailing hindered growth to such an extent that most of the bulbs are smaller than usual. The snow-storm caught some of the crop in the ground, and a portion of those which had already been pulled had to be left in the snow and slush for a week or two. There are also some complaints of rot. A Timiskaming correspondent speaks of injury to turnips from the white maggot."

"Mangels were more satisfactory than turnips to growers, but are not up to their usual size as a rule, although of good quality.

"Carrots are not largely grown as a field crop, and are reported as being from poor to medium in yield and quality.

"Sugar beets on the whole are a fair crop considering the hot, dry season. The bulbs are not so large as ordinarily, but are said to have developed good sugar qualities. The weather at the time of harvesting was satisfactory, as the crop practically escaped the snow storm."

MISCELLANEOUS.

Flax.—Flax has been grown in smaller areas this year, and correspondents have but little to say about the crop. Some returns describe the stand as being rather short, while others report conditions as being from fair to good.

Tobacco.—August returns were to the following effect: Discouraged by the low price of last year's crop, a smaller acreage was planted this season. Notwithstanding the drought the plants made fair growth, and an average yield is expected where the fields have escaped the worm, the presence of which is complained of by several correspondents.

The December bulletin said: "The acreage of tobacco was smaller than in more recent years. The yield per acre was a fair one, and the quality is regarded as good on the whole, as it was harvested under most favorable conditions."

Threshing and Marketing.—The following was contained in the December bulletin: "Threshing, generally speaking, was completed sooner than usual on account of the early harvest and the comparatively light yields of both grain and straw. Most of the work was accomplished by the end of September, although a few have yet to do the job. Wheat is selling at from $1.00 to $1.10, and other grains in proportion. Most of the grain grown, however, will be fed at home. Peas have been sold in considerable quantities to the canners. Hay is being shipped freely from western Ontario, but is scarce in the east and north. Straw is bringing about half the price of hay."

Fall Plowing.—The remarkably early grain harvest enabled farmers to get their fall plowing started sooner than usual. The land was found to be somewhat hard, but a good deal was turned under. Later rains rendered the ground much easier for working. A fair area of sod was broken up for spring seeding. As correspondents reported late in November, a large majority were through with plowing, while others were busy completing their task. The acreage turned under has been comparatively large.

FRUIT.

According to reports received in April, fruit trees suffered very lightly from the effects of the winter. Strawberries, where mulched, and bush fruits, also came through in promising condition.

May returns were to the following effect: "Orchards were in bloom fully a week earlier than usual, and a good setting of fruit of all kinds is reported, although many early cherries, and, to a lesser extent, some grapes and cherries, were caught by frost at the critical time. Some strawberries were nipped by frost while in blossom, but the injury to the crop, generally speaking, is regarded as being comparatively small."

The August bulletin had the following concerning the fruit situation: "Apples, like all other orchard fruits, are uneven in yield, and will average barely half an ordinary crop. Several correspondents speak of scab, but not so much mention as usual is made of the codling moth or other insects. The June crop seemed to have been somewhat heavier than ordinary. Spring frosts are also blamed for the thinning of apples and other crops."

"The same may be said of peaches, the early varieties of which are now coming into the market. There are some reports of curl leaf.

"Pears and plums vary in yield even more than apples, reports running all the way from poor to good.

"Cherries have been from fair to poor yield, some growers being fortunate in their varieties and others being on the losing side.

"Grapes are on the whole of fair promise—say a three fourths yield—although injured somewhat by the drought early the summer. They are well advanced for the season, and are likely to escape early frosts.

"Strawberries blossomed profusely, but some of the earlier varieties were caught by frost. In many localities a blight, ascribed to various causes, struck some fields before the berries were fully developed destroying the plants. Many growers, however, had excellent returns.

"Raspberries did well considering the drought, and rain came in time to freshen up the blackberry yield.

"Blueberries were a fairly good crop in the Northern districts."

The following appeared in the December bulletin: "Where well taken care of, fruit trees, vines, and bushes appear to be in good condition; but too many orchards are being neglected. The yield of apples has not been large, but less scab is reported, although there is still too much wormy fruit marketed. Prices for well packed fruit have been better than those of a year ago. The yield of pears was fair, and the general quality of the fruit is good. Grapes ripened unusually early, and were of medium quality. Some vineyards suffered from a touch of frost in the spring. A Grimsby correspondent says: 'The dead arm disease has done considerable injury to grapes."

LIVE STOCK AND THE DAIRY.

The April bulletin thus summed up the early spring live stock situation:—

"All classes of live stock have wintered well, owing to the comparative mildness of the season, and the generally good supply of grain and roughage on hand.

"Farm horses are said to be in fine shape for spring work. There also appears to be a revival of interest in the horse industry, as good heavy animals are commanding better prices than for some years past. Some shipments have been made to the Maritime Provinces.

"There are a fair number of beef cattle on hand, but prices have been disappointing to feeders. Some correspondents are of opinion that more calves will be vealed because of the comparatively poor market conditions for beef. Ordinary dairy cows have not kept up in price although there is a good demand for good grade animals with proven milking qualities.

"There are less bacon hogs than for some time, the slump in prices having discouraged some farmers from raising litters. There have been complaints of hogs going to market rather on the heavy side for the best bacon, as there has been a temptation to feed more at the comparatively low price prevailing for grain. On the other hand both brood sows and young pigs are said to be in brisk demand at good prices, the latter selling at from $12 to $15 a pair at about six weeks old.

"Sheep have come through the winter in excellent condition, and ewes are reported to have been lambing both early and well, many twins being reported.

There are fewer sheep on hand than for the last few years, as the great fall in the value of wool compared with war prices has caused owners of this class of live stock to lose much of their source of income. Damage to flocks by dogs is still reported."

Under the heading "Fodder Supplies" the May bulletin said: "Hay has held out much better than was expected in the fall. Most farmers have a sufficiency, and some here and there have a surplus. Some of it is selling at lower figures than prevailed six months ago. The low prices offered for grains have been disappointing. Some are disposed to hold on to their wheat hoping for an increased price; with others there is little or no surplus on hand. Most farmers have a fair supply of oats, which last season was a bumper crop. Most of the barley is being fed to live stock. Taking it all together there is a general sufficiency of grain and other fodders on hand until this year's crops come in.

The dairy situation in the third week of August was thus described in the bulletin published in that month: "The almost tropical heat for several weeks together early in the summer, and with but little rainfall, was trying to pastures, and the milk flow shrank much earlier than usual. Timely showers in July restored the condition of pastures to a great extent and dairy herds recovered somewhat in their supply of milk. The heavy slump in the value of milk and its products early in the season has been very discouraging to dairymen and may affect the industry for some time, as many farmers grew panicky and reduced their herds considerably in order to match the decreased demand for milk, etc. Several correspondents state that the older cows and poor milkers are now being turned off as canners at sacrifice prices, and that other cattle of an inferior sort will be got rid of a low values before winter on account of the scarcity of coarse grains, hay, and straw, more especially in eastern Ontario."

The December bulletin said: "Pastures were in good general condition during the fall, lending a good flow of milk to dairy cows, while beef cattle and other live stock made fair gains in flesh. The snow storm in the second week of November forced most live stock into shelter. The fall in the value of live stock has been discouraging to raisers. It has not been unusual to see cattle going at 3c. a lb., although some good beef animals have brought as high as 8½c. Most of the sales have been made at from 5c. to 6c. a lb. A number of shipments of selected beeves have been made to the British markets during the last two or three months. Many herds of cattle are being reduced in numbers in order that their owners may be able to bring the remainder through the winter in fair shape.

"Hogs are being marketed at from $8 to $9 a cwt. on foot, but they are not in such large numbers as formerly. Breeding sows especially are scarce compared with recent years. The large supply of corn, more particularly in some of the western counties will greatly help out local hog men. The great drop in the price of bacon hogs during the year—about $6 or $7 a cwt.—has greatly lessened interest in the raising of swine.

"Sheep raisers are finding little to encourage them in the handling of their animals either for flesh or wool. With the price of the latter so low, and with mutton sheep selling at from 3c. to 4c. a lb., and lambs at from 6c. to 8c. a lb. the outlook for sheep breeders is not bright.

"All classes of live stock have practically a clean bill of health."

Paying more particular attention to dairying the bulletin continued: "The flow of milk during the fall months was better than the average for that period, but dairymen have been far from satisfied with the prices paid for their products.

But little butter is now made on the farm, the bulk of the cream going to creameries or the cities. A correspondent referring to prices says: 'Butter sells around 40c. a lb. compared with 60c. a lb. a year ago.' The general quality of the article is about the same as that of last year. The cheese industry is falling off compared with the manufacture of butter. Holsteins and their grades are most frequently found in dairies. A Stormont correspondent says: 'At auction sales the black and white cows sell best.' In the St. Lawrence counties the Ayrshires have many admirers."

The fodder supply was thus referred to in the December bulletin: "An abundance of first-class corn, and a comparative scarcity of grains, and these of rather poor quality, are the most striking features of the fodder situation. A larger quantity of corn silage than ever before has been stored, and the quality is excellent. There is a surplus of hay in western Ontario, and a scarcity in many of the eastern counties and most of the northern districts. There is also more shelled corn on hand. The poor quality of the grains for feeding, more especially the lightness and hulliness of most of the oats, is commented upon by many correspondents. In some quarters very careful feeding will have to be practiced in order to conserve the fodder supply. A number of farmers are selling off some of their live stock rather than purchase feed."

Poultry.—All classes of fowl have been in good general health during the year. As to the profit of raising them there is much difference of opinion, but several correspondents state that there is as much gain in raising poultry for the investment and labor as in the handling of any other class of live stock on the farm and gives figures to back up their claim, placing profits at from 50c. to $2 a hen. Turkeys are scarcer than they were a year ago. Geese and ducks did well.

STATISTICS OF LIVE STOCK.

Statistics.—The following table gives the total number and value of the several classes of live stock and poultry on hand June 15, 1921, together with live stock sold or slaughtered in the year preceding that date.

Live Stock.	On hand June 15, 1921.		Sold or slaughtered in year ending June 15, 1921.	
	No.	Value.	No.	Value.
		$		$
Horses (all ages)	694,237	75,680,750	67,940	8,606,379
Cattle:				
Milch cows	1,204,270	62,094,883	944,613	37,509,685
Other cattle	1,685,843	41,766,682		
Sheep and lambs	1,081,828	8,207,564	537,087	3,878,796
Swine (all ages)	1,563,807	19,205,488	1,939,192	39,409,466
Poultry (all kinds)	11,458,206	11,168,318	6,194,772	7,618,519
Totals:				
1921		218,123,685		97,022,845
1920		326,737,337		152,213,847
1919		339,607,932		149,727,250
1918		324,107,476		126,742,038
1917		289,676,977		114,740,881
1916		263,869,539		99,159,081
1915		254,982,332		93,762,223
1914		250,870,078		93,017,235
1913		237,591,885		89,651,016
1912		225,848,942		84,982,339

The values for the several classes of horses on hand June 15th, 1921, were as follows: Stallions, $1,016,075; Mares, $40,582,993; Geldings, $30,027,538; colts and fillies, $4,054,144.

The values for the several classes of "other cattle" on hand were as follows: Bulls, $4,481,779; calves, $8,358,661; steers, $9,230,764; all other cattle (except milch cows), $19,695,478.

The values for the several classes of poultry on hand were as follows: Turkeys, $968,161; geese, $960,792; ducks, $404,935; other fowls, $8,834,430.

VALUES PER HEAD OF LIVE STOCK AND POULTRY ON HAND.

Live Stock.	1921	1920	1919	1918	1915	1910	1905	1900
	$	$	$	$	$	$	$	$
Horses (all ages)...	109	127	129	131	139	128	110	76
Cattle:								
Milch cows...	51.56	85.84	88.71	83.55	60.83	40.76	35.06	31.01
Other cattle...	24.77	44.67	46.37	45.52	32.18	22.43	21.29	17.93
Sheep and lambs...	7.59	14.34	16.45	16.14	7.05	5.75	4.68	4.29
Swine (all ages)....	12.28	19.98	19.62	18.80	9.93	8.50	6.44	5.42
Poultry (all kinds).	.97	1.07	.97	.76	.54	.43	.34	.29

The values per head of the various classes on hand June 15th, 1921, were as follows:—

HORSES: Stallions, $277; mares, $114.94; geldings, $110.36; colts and fillies, $61.98.

CATTLE: Bulls, $66.14; calves, $12.83; steers, $37.06; all other cattle, $27.45.

POULTRY: Turkeys, $3.32; geese, $2.33; ducks, $1.11; all other fowls, 85c.

VALUES PER HEAD OF LIVE STOCK AND POULTRY SOLD OR SLAUGHTERED.

Live Stock.	1921	1920	1919	1918	1915	1910	1905	1900
	$	$	$	$	$	$	$	$
Horses (all ages)...	127	139	138	136	146	136	119	79
	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.	$ c.
Cattle.....	39.71	62.19	63.12	61.68	49.90	37.44	36.23	32.12
Sheep and lambs...	7.22	12.42	13.35	13.98	6.72	5.36	4.28	3.64
Swine (all ages)....	20.32	30.50	27.80	22.06	14.98	12.49	9.79	7.69
Poultry (all kinds).	1.23	1.28	1.13	.82	.62	.51	.39	.37

FARM LABOR AND WAGES.

The April bulletin thus summarized the labor situation:—"While experienced men are still scarce, ordinary help on the farm is somewhat easier to procure than for some years. Newly arrived workers from the Old Country are helping out the situation considerably. The drop in price of farm products will, in the opinion of many correspondents, force a readjustment of wages tending downward. In fact, a lowering has occurred already in many instances. Men are more likely to be paid according to their ability than has been the case in the last five or six years. Figures quoted for farm labour in the older counties of the Province vary from $2.50 to $3.50 a day, with board, and from $300 to $500 a year, with keep of horse also, for single men. Married men are getting from $500 to $650 a year, with house, milk, garden, etc. Improved machinery is being used more, and there is still a large exchange of work between neighbours."

The May bulletin said:—"While there has been a perceptible lowering of the rates paid to farm labor, the low prices at present prevailing for agricultural products makes farmers less eager to employ help. The general quality of the labor offering, more especially those brought out by the Ontario Immigration Branch, is regarded as an improvement over more recent years."

The following appeared in the August bulletin:—"There were more men offering for work during harvest than for many years, but skilled farm labor has been about as scarce as ever. Many farmers have got so accustomed to lack of help that they are still trying to get along with as little hiring of men as possible. There has been a marked drop in the price of labor, practically about a dollar in the case of day workers. Rates have ranged from $2 to $4 a day, with board, but mainly at from $2.50 to $3; and from $30 to $50 a month, with board, but mostly around $35 to $40. A good many farmers exchanged work to help along harvesting, and some wives and daughters assisted at rush times."

The December bulletin had the following regarding the farm labor problem:—"A number of correspondents stress the relation between the price of farm products and the cost of labor, and assert that while there is a lowering in the rate of wages paid to farm workers a still further reduction will have to be made, and is likely to occur soon. The fitness of the hired labor available is also referred to, a common remark being: "Good men are scarce." One correspondent claims that wages are now $10 to $15 a month lower than was paid a year ago. The tendency of owners to run their farms "within themselves," with some exchange of work with neighbours, is also alluded to by some correspondents. Another phrase frequently reported is: "We do what we can and let the rest go." Many farmers are trying to do without help until spring, but some men are said to be offering to work for merely nominal wages during the winter months. Domestic servants on the farm are as scarce as ever. A correspondent suggestively remarks regarding these and other rural workers: 'When farmers install more modern conveniences it will be less difficult to get more male and female help.'"

TEMPERATURE OF 1921.

TABLE I.—Showing for each month the highest, lowest, mean daily range and mean temperature at the principal stations in Ontario for 1921; also the annual mean for each station.

Months	Southampton.	Chatham.	London.	Woodstock.	Stoney Creek.	Toronto.	Lindsay.	Cravenhurst.	Ottawa.	Haileybury.
	°	°	°	°	°	°	°	°	°	°
January:										
Highest	46.2	53.0	48.0	48.0	52.0	53.0	45.1	42.0	44.0	42.5
Lowest	0.0	6.0	2.0	0.0	-3.0	-5.0	-18.0	-33.0	-22.7	-27.0
Daily range	13.6	11.0	14.1	12.6	14.2	15.2	19.4	21.9	18.4	17.6
Monthly mean	25.2	29.2	27.1	25.1	28.3	27.8	21.6	17.1	17.2	11.1
February:										
Highest	54.5	57.0	56.0	51.5	55.0	53.4	48.9	49.0	44.5	46.2
Lowest	5.2	13.0	6.0	6.0	10.0	7.2	-2.0	-10.0	-7.5	-24.8
Daily range	13.7	9.5	14.8	11.6	14.0	13.8	18.5	19.1	19.5	22.3
Monthly mean	26.1	29.1	27.2	25.2	28.5	28.5	23.0	18.7	18.7	11.1
March:										
Highest	68.5	68.0	71.0	68.3	70.0	70.0	64.5	60.0	71.0	60.0
Lowest	9.2	17.0	12.0	11.0	11.0	7.0	2.2	0.0	-0.5	-9.6
Daily range	17.9	15.7	20.7	15.7	18.0	16.9	19.2	19.1	17.7	17.5
Monthly mean	36.4	40.8	41.1	37.5	39.5	38.5	35.6	32.0	32.3	23.9
April:										
Highest	81.5	86.0	80.0	79.0	78.0	75.2	81.6	81.0	79.5	86.9
Lowest	19.2	24.0	21.0	23.0	27.0	25.8	19.9	14.0	18.5	11.0
Daily range	19.5	17.5	23.1	18.2	18.0	18.0	23.9	24.6	22.6	21.7
Monthly mean	48.5	51.2	50.3	47 6	47.4	49.3	49.1	46.3	47.1	42.0
May:										
Highest	82.5	93.0	91.0	84.0	89.0	87.0	92.4	85.0	92.5	81.4
Lowest	30.1	34.0	31.0	30.0	33.0	33.4	27.1	24.0	36.5	28.0
Daily range	18.0	19.7	24.6	19.6	19.4	20.5	24.8	23.2	23.7	21.9
Monthly mean	54.6	59.5	59.0	56.6	55.4	60.0	57.5	55.8	59.8	53.5
June:										
Highest	84.8	98.0	94.0	86.5	91.0	90.5	91.6	91.0	93.5	91.8
Lowest	35.0	38.0	36.0	37.0	38.0	45.0	36.0	31.0	40.7	32.6
Daily range	19.4	18.7	27.5	22.0	22.0	22.8	27.8	28.0	24.6	25.4
Monthly mean	62.2	70.0	68.6	65.2	65.0	68.5	65.9	63.0	66.4	65.3
July:										
Highest	91.2	101.0	100.0	92.5	98.0	98.4	94.6	98.0	98.0	102.2
Lowest	52.5	59.0	54.0	55.0	55.0	58.8	51.0	48.0	53.5	48.1
Daily range	18.9	17.1	23.0	18.0	20.1	20.5	23.7	26.8	23.0	22.3
Monthly mean	73.0	77.9	76.9	74.0	76.4	77.8	75.1	72.6	76.1	74.4
August:										
Highest	82.0	93.0	92.0	85.0	92.0	90.6	85.2	82.0	88.0	89.4
Lowest	43.8	51.0	45.0	44.5	43.0	47.4	42.5	35.0	46.5	43.0
Daily range	17.5	15.7	23.3	18.9	21.5	20.8	22.9	23.6	23.9	19.9
Monthly mean	64.8	70.2	67.5	65.0	67.1	68.0	64.4	62.0	66.9	63.2
September:										
Highest	86.5	94.0	90.0	85.0	93.0	92.0	87.5	86.0	94.5	90.0
Lowest	40.2	49.0	39.0	40.0	37.0	43.0	37.6	28.0	37.0	37.9
Daily range	18.3	15.9	23.8	19.8	24.1	22.1	24.0	25.8	25.7	20.5
Monthly mean	64.5	69.5	66.5	64.2	66.3	67.7	62.9	60.4	62.9	59.7
October:										
Highest	67.2	76.0	71.0	66.0	71.0	71.7	66.7	64.0	73.0	67.2
Lowest	29.1	31.0	31.0	29.0	27.0	32.8	25.9	22.0	24.0	26.0
Daily range	13.2	14.6	21.4	16.5	16.8	17.1	18.8	16.8	18.7	12.9
Monthly mean	49.6	52.7	49.9	48.0	49.1	50.3	46.6	44.6	46.2	43.2
November:										
Highest	59.1	63.0	63.0	63.0	66.0	61.6	60.2	58.0	66.0	40.2
Lowest	19.6	23.0	20.0	19.0	17.0	21.1	8.0	1.0	10.0	0.2
Daily range	10.2	10.5	11.2	10.2	10.6	11.3	13.6	13.1	13.8	10.8
Monthly mean	35.4	38.4	35.7	33.9	36.8	36.3	31.1	28.7	29.2	23.3
December:										
Highest	52.8	54.0	53.0	52.0	55.0	51.8	49.6	48.0	46.0	41.3
Lowest	2.9	9.0	6.0	3.0	3.0	0.0	-10.2	-19.0	-14.0	-23.6
Daily range	12.4	11.9	13.3	11.7	13.7	14.1	18.3	19.9	15.9	13.7
Monthly mean	27.3	30.6	27.9	25.6	28.6	28.3	22.2	18.8	18.5	13.5
Annual mean	47.3	51.6	49.8	47.3	49.0	50.1	46.3	43.3	45.1	40.4

AVERAGE TEMPERATURE FOR FORTY YEARS

TABLE II.—Showing for each month, the monthly average for the highest, lowest, mean daily range and the mean temperature at the principal stations in Ontario, derived from the forty years, 1882–1921; also the annual mean at each station for the same period.

Months.	Southampton.	Chatham.	London.	Woodstock.	Stony Creek.	Toronto.	Lindsay.	Gravenhurst.	Ottawa.	Haileybury.
	°	°	°	°	°	°	°	°	°	°
January:										
Highest	44.6	46.0	46.1	45.9	49.9	45.3	41.5	41.0	40.0	37.9
Lowest	-6.6	-8.2	-9.7	-10.6	-4.7	-7.2	-20.0	-27.2	-21.4	-33.2
Daily range	14.7	12.1	15.1	16.0	14.4	14.5	17.9	20.6	18.0	23.1
Monthly mean	21.0	21.6	21.5	20.2	24.8	22.4	15.9	14.1	11.3	6.9
February:										
Highest	44.1	48.4	46.5	45.4	48.1	45.1	41.9	42.2	40.2	40.9
Lowest	-11.9	-9.9	-11.0	-11.6	-6.3	-7.7	-18.1	-27.0	-20.2	-33.4
Daily range	16.9	13.9	16.8	16.9	15.4	15.3	19.7	22.2	18.8	23.2
Monthly mean	19.0	20.5	20.2	19.2	22.6	21.2	15.4	13.6	12.6	9.5
March:										
Highest	54.9	59.4	59.8	57.3	60.6	57.1	53.1	51.8	49.7	51.7
Lowest	-2.5	0.1	1.5	-0.6	5.3	4.1	-6.4	-12.9	-8.1	-22.4
Daily range	17.1	15.3	17.8	17.2	15.3	14.8	18.6	21.2	17.7	25.3
Monthly mean	27.2	30.1	30.1	28.4	32.6	30.0	25.7	23.8	24.3	20.6
April:										
Highest	72.6	76.8	76.2	74.3	76.6	70.8	74.1	71.4	73.3	73.2
Lowest	16.1	18.6	18.5	17.4	23.0	21.1	14.2	10.9	15.3	6.6
Daily range	17.7	18.2	20.7	20.0	17.3	16.8	21.1	21.2	19.3	23.8
Monthly mean	40.6	43.8	43.4	42.3	44.2	42.8	41.7	39.5	41.3	38.6
May:										
Highest	80.2	83.1	83.4	80.9	84.8	80.3	83.1	81.4	83.1	84.7
Lowest	28.4	29.6	29.3	29.1	33.1	32.1	28.1	26.8	31.2	19.3
Daily range	19.6	20.9	22.9	21.8	20.3	19.3	23.8	22.9	22.0	25.8
Monthly mean	51.1	55.3	55.3	53.8	54.9	54.0	54.0	52.3	55.0	51.9
June:										
Highest	85.3	88.7	88.7	86.5	91.2	87.6	88.8	86.9	87.9	89.6
Lowest	37.5	38.1	38.0	38.3	41.7	42.3	38.5	36.0	41.6	34.0
Daily range	19.9	21.9	23.6	22.7	21.4	20.4	24.9	24.2	21.5	26.6
Monthly mean	60.7	64.8	64.9	63.4	65.3	64.1	63.7	62.3	64.6	61.9
July:										
Highest	87.5	92.7	92.6	89.8	92.6	91.7	91.9	89.6	91.4	92.0
Lowest	44.0	44.2	44.1	44.5	48.5	48.8	44.2	42.9	48.1	41.0
Daily range	20.1	22.1	23.3	22.8	21.6	20.5	24.6	23.3	20.6	25.1
Monthly mean	66.5	69.5	69.5	67.8	71.5	69.4	68.1	66.9	69.0	66.0
August:										
Highest	86.1	90.6	90.9	88.4	93.1	89.1	89.9	87.9	88.8	88.5
Lowest	41.9	42.7	41.0	41.7	45.8	46.3	40.4	38.3	43.8	37.8
Daily range	18.2	21.0	23.6	23.5	21.3	21.9	24.2	22.8	20.6	23.8
Monthly mean	64.7	67.2	66.7	65.1	69.0	66.0	65.5	64.3	66.0	62.9
September:										
Highest	84.7	87.5	87.0	85.1	89.8	85.4	85.9	83.7	84.4	83.7
Lowest	34.5	34.8	32.2	32.1	36.4	36.8	31.8	30.6	33.4	29.7
Daily range	18.2	19.9	22.6	22.0	20.8	19.0	22.9	22.0	20.3	22.8
Monthly mean	59.2	61.3	60.7	59.1	62.8	60.6	58.4	57.5	58.2	55.6
October:										
Highest	74.3	76.1	76.1	74.2	77.5	73.6	74.2	72.3	71.5	72.9
Lowest	26.0	25.8	24.2	24.2	26.8	27.0	21.9	21.8	24.8	18.6
Daily range	16.1	16.9	20.1	19.1	18.8	16.5	19.7	18.7	17.2	19.2
Monthly mean	48.4	49.5	48.6	47.3	50.9	48.9	46.5	46.1	46.0	43.5
November:										
Highest	60.8	62.7	62.1	61.2	65.0	60.3	59.1	58.5	57.7	55.1
Lowest	14.4	14.5	13.4	12.2	17.4	15.8	6.5	6.8	7.3	-0.2
Daily range	13.3	12.3	14.7	14.7	14.1	12.8	15.1	14.5	12.2	14.6
Monthly mean	36.7	37.4	36.8	35.6	39.3	37.5	33.7	33.2	32.5	29.3
December:										
Highest	49.2	49.2	52.6	49.2	53.4	48.6	45.3	44.7	42.7	43.4
Lowest	0.5	0.3	-1.8	-2.8	-0.5	-0.5	-13.1	-15.1	-15.2	-24.9
Daily range	12.6	10.6	13.5	13.7	12.8	12.7	15.8	16.9	14.9	18.8
Monthly mean	26.7	26.5	26.5	25.6	29.0	27.4	21.2	20.7	17.6	14.0
Annual mean	43.5	45.6	45.4	44.0	47.2	45.4	42.5	41.2	41.5	38.4

RAIN AND SNOW.

TABLE III.—Summary of the total fall of rain and snow, and the number of days on which rain and snow fell in Ontario during 1921, at stations reporting the whole year, and the average for the Province.

Stations.	Rain.		Snow.		Stations.	Rain.		Snow.	
	Inches	Days	Inches	Days		Inches	Days	Inches	Days
ALGOMA:					NORFOLK:				
Biscotasing	25.28	81	82.1	6[illegible]	Simcoe	36.55	102	32.4	17
Kapuskasing	27.75	50	78.5	43	NORTHUMBERLAND:				
Steep Hill Falls	20.69	80	141.3	8[illegible]	Healey Falls	27.50	86	29.1	15
BRANT:					OXFORD:				
Paris	37.63	99	49.2	21	Woodstock	32.57	115	31.3	41
BRUCE:					PARRY SOUND:				
Southampton	30.70	108	51.3	47	Emsdale	29.86	71	57.4	35
Walkerton	28.96	82	55.5	21	Parry Sound	31.11	101	83.7	47
Wiarton	29.71	74	87.0	22	PEEL:				
CARLETON:					Alton	28.26	89	50.1	29
Ottawa	27.98	96	76.2	52	PERTH:				
DUNDAS:					Stratford	30.46	92	39.0	16
Morrisburg	26.34	69	72.1	41	PETERBOROUGH:				
ELGIN:					Peterboro	25.52	88	44.3	29
Port Stanley	27.45	122	51.8	52	PRESCOTT:				
ESSEX:					Vankleek Hill	12.88	63	47.8	26
Harrow	31.82	81	41.1	19	RAINY RIVER:				
Leamington	31.11	76	30.0	9	Dryden	15.89	56	67.1	33
FRONTENAC:					Fort Frances	17.59	57	62.4	34
Kingston	21.60	95	32.6	42	Kenora	21.87	41	66.0	33
GREY:					Mine Centre	20.19	81	75.9	51
Eugenia	31.98	80	53.0	29	Sioux Lookout	20.55	54	65.2	35
Meaford	23.73	87	46.5	23	RENFREW:				
Owen Sound	23.14	67	42.2	22	Clontarf	20.94	60	64.5	29
HALTON:					Pembroke	21.87	82	69.0	37
Georgetown	25.27	97	32.4	19	Renfrew	19.40	88	43.4	25
HASTINGS:					SIMCOE:				
Belleville	28.80	72	30.5	21	Beeton	23.58	76	42.8	26
Queensboro	22.68	82	67.0	18	SUDBURY:				
Trenton	24.86	84	49.0	16	Sudbury	20.77	83	54.2	37
HURON:					Wawaitin	23.39	70	203.4	88
Clinton	37.84	97	31.7	33	THUNDER BAY:				
Lucknow	35.70	69	58.1	35	Kakabeka Falls	20.70	81	77.0	44
KENT:					Port Arthur	18.42	61	44.1	37
Chatham	25.74	75	33.5	12	Schreiber	17.51	66	85.0	49
LEEDS:					VICTORIA:				
Brockville	22.21	51	18.0	9	Lindsay	30.07	99	30.5	40
LINCOLN:					WATERLOO:				
Grimsby	26.16	90	47.7	35	Kitchener	30.83	90	69.5	24
St. Catharines	22.00	86	31.6	24	WELLAND:				
MANITOULIN:					Niagara Falls	24.71	84	49.0	21
Gore Bay	22.76	83	83.3	30	Welland	26.07	100	38.5	22
Providence Bay	25.82	51	105.0	23	WELLINGTON:				
MIDDLESEX:					Elora	32.45	81	41.9	24
London	33.04	92	65.6	36	Guelph	31.25	87	47.0	16
Lucan	28.07	105	92.5	46	Mount Forest	31.61	94	54.6	46
MUSKOKA:					WENTWORTH:				
Beatrice	34.63	73	58.0	21	Stoney Creek	20.55	78	27.5	13
Gravenhurst	30.76	76	63.5	25	YORK:				
NIPISSING:					Toronto	23.90	119	34.5	38
Algonquin Park	28.74	81	87.6	47	Wexford	19.81	91	21.8	14
Haileybury	22.73	110	85.0	71	Average for the				
Iroquois Falls	22.14	93	131.4	82	Province: 1921	25.52	79	54.0	33
Montreal River	21.94	91	78.3	50	1920	21.51	71	75.9	40
					1882–1921	24.05	73	72.5	39

RAIN AND SNOW.

TABLE IV.—Monthly summary of inches of rain and snow in precipitation in the several districts in Ontario in 1921, also the average derived from the forty years, 1882–1921.

Month.	West and Southwest.		North and Northwest.		Centre.		East and Northeast.		The Province.	
	Rain	Snow.	Rain.	Snow.	Rain.	Snow.	Rain.	Snow.	Rain.	Snow.
1921	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
January	0.63	8.5	0.35	10.5	0.31	3.6	0.59	7.6	0.47	7.5
February	0.32	16.3	0.08	14.2	0.17	11.2	0.27	11.5	0.21	13.3
March	3.95	2.0	2.01	11.0	2.77	1.2	3.32	3.2	3.01	4.4
April	3.51	3.0	2.36	3.9	3.61	3.0	2.18	2.5	2.92	3.1
May	2.20	0.2	2.12	2.7	1.91	.....	1.96	.....	2.05	0.7
June	2.38	.....	2.00	.....	2.30	.....	1.86	.....	2.13	.....
July	4.36	.....	4.14	.....	3.20	.....	2.85	.....	3.64	.....
August	2.64	.....	2.62	.....	2.36	.....	2.35	.....	2.49	.....
September	3.07	.....	4.37	.....	1.50	.....	2.11	.....	2.76	.....
October	3.82	S	1.95	0.3	3.99	S	3.72	1.4	3.37	.04
November	1.85	7.1	0.68	16.0	1.04	10.7	0.73	13.1	1.08	11.7
December	2.07	12.4	0.87	20.3	1.50	8.2	1.14	10.6	1.39	12.9
The Year	30.80	49.5	23.55	78.9	24.66	37.9	23.08	49.9	25.52	54.0
1882–1921										
January	1.16	15.9	0.63	23.8	1.03	16.6	0.91	19.8	0.93	19.0
February	1.10	13.6	0.41	19.1	0.86	14.2	0.59	16.5	0.74	15.9
March	1.40	8.5	0.93	13.0	1.32	9.4	1.17	11.1	1.21	10.5
April	2.11	2.0	1.57	3.8	2.03	2.8	1.68	3.3	1.85	3.0
May	3.12	S	2.60	0.5	2.79	.....	2.70	0.1	2.80	0.1
June	2.90	.....	2.66	.....	2.71	.....	2.75	.....	2.75	.....
July	2.67	.....	2.89	.....	2.83	.....	2.83	.....	2.80	.....
August	2.78	.....	2.84	.....	2.41	.....	2.66	.....	2.67	.....
September	2.58	.....	3.08	.....	2.32	.....	2.55	.....	2.63	.....
October	2.80	0.7	2.93	2.1	2.63	0.5	2.56	0.9	2.73	1.1
November	2.23	5.2	1.81	11.8	1.95	5.1	1.79	7.6	1.95	7.4
December	1.41	14.3	0.81	21.5	1.21	11.9	1.08	14.5	1.13	15.5
The Year	26.26	60.2	23.16	95.6	24.09	60.5	23.27	73.8	24.19	72.5

SUNSHINE.

TABLE V.—Monthly summary of bright sunshine at the principal stations in Ontario for 1921, showing the number of hours the sun was above the horizon, the hours of registered sunshine, the total for the year, and the average derived from the forty years, 1882–1921.

Month.	Sun above Horizon.	Woodstock	Toronto.	Lindsay.	Kingston.	Ottawa.	Average of five stations.		
							1921	1920	1882–1921
1921	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.	hrs.
January	285.7	102.4	112.1	117.5	115.3	125.5	114.6	99.3	.....
February	291.4	87.2	93.7	72.0	94.4	113.2	92.1	115.4	.....
March	369.9	95.0	115.3	86.9	117.0	144.4	111.7	155.7	.....
April	406.4	159.4	188.9	165.7	182.2	201.0	179.4	145.6	.....
May	461.1	235.6	245.4	217.5	276.9	316.2	258.3	265.6	.....
June	465.7	283.5	318.8	277.8	298.2	334.0	302.4	227.0	.....
July	470.9	289.8	296.9	247.7	283.6	282.9	280.2	231.5	.....
August	434.5	230.2	260.6	184.4	258.9	276.7	242.2	227.0	.....
September	376.3	183.7	214.0	186.7	158.4	231.1	194.8	217.6	.....
October	346.2	160.1	144.7	102.3	134.7	122.6	132.9	156.3	.....
November	286.9	43.5	43.5	34.1	62.1	62.3	49.1	49.6	.....
December	274.3	44.9	59.1	74.3	68.5	78.3	65.0	47.2	.....
The Year	4,463.3	1,915.3	2,093.0	1,766.9	2,050.2	2,288.2	2,022.7	1,937.8	
1882–1921									
January	.....	65.6	79.1	76.0	78.8	88.2	.....	.....	77.5
February	.....	91.3	108.1	101.3	109.8	111.6	.....	.....	104.4
March	.....	127.1	154.2	146.4	146.5	153.0	.....	.....	145.4
April	.....	166.7	187.1	179.4	179.8	191.3	.....	.....	180.9
May	.....	211.1	223.3	207.1	208.7	212.4	.....	.....	212.5
June	.....	251.3	262.0	237.0	251.0	240.8	.....	.....	248.4
July	.....	273.8	283.7	252.8	270.7	257.7	.....	.....	267.7
August	.....	234.0	250.1	224.5	247.7	241.1	.....	.....	239.5
September	.....	177.3	208.2	185.4	185.1	174.8	.....	.....	186.2
October	.....	143.4	151.3	127.3	137.4	132.0	.....	.....	138.3
November	.....	76.1	83.0	70.2	79.6	83.5	.....	.....	78.5
December	.....	54.9	65.6	56.6	68.3	65.5	.....	.....	62.2
The Year	.....	1,872.6	2,055.7	1,864.0	1,963.4	1,951.9	.....	.....	1,941.5

RURAL AREA ASSESSED.

TABLE VI.—Showing by County Municipalities the rural area of Ontario as returned by Municipal assessors for 1921, also the Comparative totals for the Province of the five years, 1917-1921. Only townships under municipal organization are included.

Counties and Districts.	Acres of assessed land.	Acres cleared.	Acres of wood-land.	Acres of slash land.	Acres of swamp, marsh or waste land.	Per cent cleared
Algoma	323,135	61,373	211,357	14,907	35,498	18.99
Brant	214,724	178,653	10,035	16,278	9,758	83.20
Bruce	929,958	578,268	75,595	149,950	126,145	62.18
Carleton	566,206	383,093	60,172	85,293	37,648	67.66
Dufferin	356,545	283,690	16,146	26,666	30,043	79.57
Dundas	236,452	182,088	19,628	31,151	3,585	77.01
Durham	373,897	312,644	21,484	7,843	31,926	83.62
Elgin	435,761	363,568	46,019	21,751	4,423	83.43
Essex	420,573	368,350	16,440	27,349	8,434	87.58
Frontenac	694,792	252,351	82,629	167,301	192,511	36.32
Glengarry	288,088	201,454	48,841	25,999	11,794	69.93
Grenville	272,929	186,835	32,756	17,307	36,031	68.46
Grey	1,064,049	708,583	99,019	93,395	163,052	66.59
Haldimand	281,489	245,169	26,863	7,634	1,823	87.10
Haliburton	591,643	50,247	390,865	85,633	64,898	8.49
Halton	223,977	173,770	16,938	26,248	7,021	77.58
Hastings	1,081,943	447,191	207,000	253,878	173,874	41.33
Huron	797,039	672,735	46,807	30,442	47,055	84.40
Kenora	76,631	7,944	23,812	37,732	7,143	10.37
Kent	569,173	484,918	24,677	45,253	14,325	85.20
Lambton	659,122	527,247	62,959	65,662	3,254	79.99
Lanark	675,617	339,925	173,628	40,911	121,153	50.31
Leeds	469,383	273,267	102,014	38,212	55,890	58.22
Lennox and Addington	442,637	256,152	101,820	39,317	45,348	57.87
Lincoln	189,705	164,034	13,835	10,322	1,514	86.47
Manitoulin	311,130	49,793	55,849	86,458	119,030	16.00
Middlesex	757,755	673,361	55,272	16,665	12,457	88.86
Muskoka	574,792	71,757	329,928	77,673	95,434	12.48
Nipissing	329,395	67,030	185,176	20,317	56,872	20.35
Norfolk	397,293	284,321	60,122	30,647	22,203	71.56
Northumberland	436,577	353,713	37,052	20,168	25,644	81.02
Ontario	509,182	385,708	23,822	56,121	43,531	75.75
Oxford	471,380	400,184	31,171	22,039	17,986	84.90
Parry Sound	656,741	91,030	372,065	106,453	87,193	13.86
Peel	289,956	264,434	8,248	8,647	8,627	91.20
Perth	519,255	458,076	31,675	21,347	8,157	88.22
Peterborough	594,383	268,887	135,713	115,691	74,092	45.24
Prescott	292,473	221,605	27,069	35,801	7,998	75.77
Prince Edward	234,402	197,966	18,117	4,101	14,218	84.46
Rainy River	360,593	45,116	200,144	61,210	54,123	12.51
Renfrew	1,061,034	395,219	360,689	171,310	133,816	37.25
Russell	249,960	163,600	13,586	70,359	2,415	65.45
Simcoe	967,048	687,915	77,958	150,747	50,428	71.14
Stormont	247,398	167,252	30,905	37,891	11,350	67.60
Sudbury	376,873	66,012	133,951	44,818	132,092	17.52
Thunder Bay	460,271	40,084	320,509	56,871	42,807	8.71
Timiskaming	380,591	60,566	220,883	54,282	44,860	15.91
Victoria	596,455	290,959	60,039	147,063	98,394	48.78
Waterloo	306,201	253,626	31,458	5,748	15,369	82.83
Welland	222,525	187,496	13,330	10,473	11,226	84.26
Wellington	625,184	503,818	31,777	16,282	73,307	80.59
Wentworth	269,232	214,206	14,742	13,238	27,046	79.56
York	533,279	443,971	23,607	30,503	35,198	83.25
The Province:						
1921	25,266,826	15,011,254	4,836,196	2,859,357	2,560,019	59.41
1920	25,234,193	14,961,176	4,857,973	2,820,049	2,594,995	59.29
1919	25,118,641	14,897,839	4,900,048	2,756,686	2,564,068	59.31
1918	25,157,793	14,798,693	4,937,440	2,772,100	2,649,560	58.82
1917	25,045,029	14,728,014	4,835,474	2,751,208	2,730,333	58.81

Statistics from Municipal Assessors are furnished by the Bureau of Municipal Affairs.

FALL WHEAT AND SPRING WHEAT.

TABLE VII.—Showing by County Municipalities of Ontario the area, produce and market value of Fall Wheat and Spring Wheat for the year 1921, together with the comparative totals for the Province for 1920, and the annual average for various periods.

Counties and Districts.	Fall Wheat.				Spring Wheat.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	202	4,565	22.6	5,478	1,279	18,162	14.2	20,995
Brant	16,866	357,559	21.2	396,175	65	787	12.1	837
Bruce	24,756	571,864	23.1	633,053	748	10,622	14.2	11,493
Carleton	47	761	16.2	848	5,948	82,082	13.8	98,498
Dufferin	1,675	31,490	18.8	33,694	2,111	26,176	12.4	28,008
Dundas	195	4,173	21.4	4,695	867	14,132	16.3	16,958
Durham	6,498	118,264	18.2	130,918	9,042	107,600	11.9	111,043
Elgin	27,549	564,755	20.5	617,842	154	2,202	14.3	2,319
Essex	31,039	630,092	20.3	670,418	569	8,307	14.6	8,681
Frontenac	337	3,673	10.9	4,139	949	12,527	13.2	13,930
Glengarry	189	4,253	22.5	4,891	4,270	63,623	14.9	70,622
Grenville	10	156	15.6	183	611	8,310	13.6	9,897
Grey	17,552	403,696	23.0	445,277	3,599	56,504	15.7	59,499
Haldimand	18,463	328,641	17.8	368,078	451	5,412	12.0	5,840
Haliburton	25	358	14.3	418	214	2,461	11.5	2,601
Halton	6,965	142,783	20.5	157,918	1,473	23,715	16.1	24,877
Hastings	3,149	49,124	15.6	54,577	2,631	35,519	13.5	38,183
Huron	29,418	797,228	27.1	879,342	954	12,497	13.1	13,072
Kent	70,774	1,592,415	22.5	1,745,287	1,548	23,375	15.1	24,707
Lambton	51,890	1,214,226	23.4	1,342,934	223	3,033	13.6	3,336
Lanark	709	12,408	17.5	13,711	8,686	98,152	11.3	113,954
Leeds	731	11,696	16.0	13,216	1,101	13,212	12.0	15,273
Lennox and Addington	972	14,872	15.3	16,761	2,341	36,754	15.7	41,753
Lincoln	14,581	271,207	18.6	300,497	112	1,165	10.4	1,210
Manitoulin	84	1,285	15.3	1,542	1,659	16,922	10.2	19,545
Middlesex	57,119	1,450,823	25.4	1,620,569	221	3,160	14.3	3,353
Muskoka	30	465	15.5	581	214	2,568	12.0	2,825
Nipissing	37	740	20.0	814	1,287	15,830	12.3	17,176
Norfolk	20,473	374,656	18.3	409,874	105	1,596	15.2	1,676
Northumberland	6,238	109,165	17.5	120,955	8,245	98,940	12.0	105,371
Ontario	8,967	197,274	22.0	222,722	6,649	77,793	11.7	79,816
Oxford	25,409	640,307	25.2	702,417	179	2,685	15.0	2,792
Parry Sound	8	160	20.0	184	879	13,185	15.0	14,767
Peel	7,125	137,513	19.3	150,852	2,617	35,591	13.6	36,516
Perth	23,046	652,202	28.3	719,379	441	4,454	10.1	4,757
Peterborough	7,453	123,720	16.6	132,628	9,074	99,814	11.0	101,311
Prescott	69	1,090	15.8	1,264	2,584	37,726	14.6	45,007
Prince Edward	3,288	50,306	15.3	55,437	1,564	20,488	13.1	21,902
Rainy River and Kenora	41	984	24.0	1,082	1,166	18,190	15.6	18,554
Renfrew	405	8,100	20.0	9,218	33,376	317,072	9.5	359,560
Russell	83	1,594	19.2	1,913	2,082	32,687	15.7	40,532
Simcoe	50,956	1,003,833	19.7	1,107,228	4,398	65,530	14.9	68,479
Stormont	46	616	13.4	739	1,360	17,680	13.0	19,890
Sudbury	32	480	15.0	528	1,535	16,118	10.5	18,471
Thunder Bay	4	60	15.0	72	344	5,779	16.8	6,357
Timiskaming	56	1,254	22.4	1,505	1,570	32,342	20.6	40,428
Victoria	3,531	70,973	20.1	73,173	6,418	91,136	14.2	92,594
Waterloo	20,269	494,564	24.4	549,955	132	1,914	14.5	1,985
Welland	20,859	337,916	16.2	397,051	77	839	10.9	913
Wellington	6,498	170,897	26.3	193,455	1,476	20,221	13.7	21,333
Wentworth	12,778	259,393	20.3	296,227	368	4,563	12.4	5,165
York	21,924	447,250	20.4	485,266	12,938	186,307	14.4	198,603
The Province:								
1921	621,420	13,667,879	22.0	15,096,980	152,904	1,907,459	12.5	2,087,264
1920	762,371	18,492,013	24.3	35,759,610	267,367	4,480,472	16.8	8,237,182
Annual Averages:								
1912–1921	656,001	15,264,886	23.3	22,062,175	198,052	3,609,481	18.2	6,193,730
1902–1911	720,272	16,912,017	23.5	14,142,444	182,335	2,269,976	17.9	2,655,591
1892–1901	930,794	18,688,313	20.1	12,650,091	356,355	5,405,846	15.2	3,650,840
1882–1891	902,846	18,059,235	20.0	16,250,884	563,547	8,882,998	15.8	7,959,306
1882–1921	802,479	17,226,113	21.5	16,276,398	325 072	5,292,075	16.3	5,114,867

BARLEY AND OATS

TABLE VIII.—Showing by County Municipalities of Ontario the area, produce and market value of Barley and Oats for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Barley.				Oats.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	1,337	24,066	18.0	19,060	12,235	220,230	18.0	137,644
Brant	5,470	116,511	21.3	78,062	34,757	855,022	24.6	436,916
Bruce	16,207	385,727	23.8	248,022	119,196	2,813,026	23.6	1,488,091
Carleton	6,039	126,215	20.9	101,729	95,207	2,265,927	23.8	1,268,919
Dufferin	13,820	283,310	20.5	175,086	69,887	1,537,514	22.0	685,731
Dundas	5,562	111,796	20.1	89,437	29,135	608,922	20.9	369,616
Durham	6,573	125,544	19.1	82,231	59,457	1,248,597	21.0	626,796
Elgin	4,962	132,485	26.7	89,295	60,055	1,543,414	25.7	780,967
Essex	13,489	318,340	23.6	170,949	81,573	2,324,831	28.5	841,589
Frontenac	5,189	93,921	18.1	69,971	45,299	996,578	22.0	558,084
Glengarry	4,305	92,558	21.5	69,048	46,694	1,172,019	25.1	627,030
Grenville	1,803	29,028	16.1	21,858	41,973	709,344	16.9	434,119
Grey	22,926	557,102	24.3	357,102	162,813	3,907,512	24.0	1,863,883
Haldimand	6,069	115,311	19.0	73,107	41,962	931,556	22.2	453,668
Haliburton	672	9,744	14.5	7,522	12,268	244,133	19.9	154,292
Halton	6,560	150,224	22.9	94,491	33,045	895,520	27.1	435,223
Hastings	18,586	379,154	20.4	275,645	98,976	2,236,858	22.6	1,344,352
Huron	21,509	488,254	22.7	320,783	152,558	3,569,857	23.4	1,752,800
Kent	17,549	477,333	27.2	269,216	84,256	2,645,638	31.4	1,026,508
Lambton	10,248	226,481	22.1	139,286	87,090	2,299,176	26.4	1,011,637
Lanark	5,374	97,807	18.2	72,182	53,297	1,017,973	19.1	556,831
Leeds	4,161	70,321	16.9	54,499	57,448	890,444	15.5	551,185
Lennox and Addington	7,351	160,252	21.8	114,260	45,707	1,092,397	23.9	604,096
Lincoln	1,764	34,751	19.7	23,665	24,523	561,277	22.9	284,006
Manitoulin	1,594	25,663	16.1	20,145	8,770	164,876	18.8	109,313
Middlesex	8,827	205,669	23.3	137,593	115,120	3,200,336	27.8	1,449,752
Muskoka	617	11,415	18.5	8,653	17,458	371,855	21.3	231,666
Nipissing	1,060	22,154	20.9	16,217	16,550	360,790	21.8	197,352
Norfolk	3,234	71,471	22.1	46,027	47,338	1,098,242	23.2	556,809
Northumberland	8,323	168,957	20.3	112,694	72,494	1,667,362	23.0	860,359
Ontario	12,832	247,658	19.3	154,786	86,119	1,756,828	20.4	845,034
Oxford	8,518	207,839	24.4	145,072	83,182	1,971,413	23.7	1,060,620
Parry Sound	1,278	25,816	20.2	19,001	23,624	552,802	23.4	355,452
Peel	23,913	523,695	21.9	343,544	54,991	1,253,795	22.8	606,837
Perth	22,974	523,807	22.8	348,855	109,700	2,424,370	22.1	1,241,277
Peterborough	6,758	140,566	20.8	90,806	56,205	1,287,095	22.9	670,576
Prescott	4,789	105,358	22.0	81,336	51,194	1,325,925	25.9	705,392
Prince Edward	10,829	212,248	19.6	149,847	29,486	648,692	22.0	361,321
Rainy River and Kenora	1,731	43,794	25.3	30,919	9,318	281,404	30.2	142,109
Renfrew	3,703	50,731	13.7	37,845	78,231	1,314,281	16.8	754,397
Russell	2,786	63,521	22.8	52,151	41,339	946,663	22.9	530,131
Simcoe	44,664	915,612	20.5	533,802	154,487	3,970,316	25.7	1,830,316
Stormont	3,044	53,878	17.7	42,564	32,586	668,013	20.5	395,464
Sudbury	1,082	15,256	14.1	11,808	15,110	249,315	16.5	153,578
Thunder Bay	602	13,966	23.2	9,050	6,715	215,552	32.1	103,896
Timiskaming	1,819	55,116	30.3	41,888	13,144	454,782	34.6	246,037
Victoria	12,537	268,292	21.4	179,219	74,158	1,579,565	21.3	762,930
Waterloo	8,520	207,036	24.3	143,269	59,444	1,563,377	26.3	833,280
Welland	1,811	31,511	17.4	21,648	27,280	496,496	18.2	269,101
Wellington	19,316	455,858	23.6	308,616	117,720	2,754,648	23.4	1,291,930
Wentworth	5,316	120,142	22.6	80,375	44,087	1,075,723	24.4	494,833
York	32,174	756,089	23.5	481,629	99,697	2,332,910	23.4	1,201,449
The Province:								
1921	462,176	10,149,353	22.0	6,665,865	3,094,958	72,575,191	23.4	36,555,194
1920	484,328	16,660,350	34.4	15,631,613	2,880,053	129,171,312	44.9	75,159,913
Annual Averages:								
1912–1921	565,811	17,044,596	30.1	14,650,272	2,797,677	101,507,145	36.3	59,382,491
1902–1911	711,199	21,709,056	30.5	10,870,736	2,703,900	98,968,442	36.6	36,309,289
1892–1901	498,932	13,100,823	26.3	5,037 346	2,291,902	79,229,462	34.6	22,119,649
1882–1891	743,245	19,349,351	26.0	10,547,091	1,663,205	58,410,603	35.1	21,017,492
1882–1921	629,797	17,800,956	28.3	10,276,361	2,364,171	84,528,913	35.8	34,707,230

PEAS AND BEANS.

TABLE IX.—Showing by County Municipalities of Ontario the area, produce and market value of Peas and Beans for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Peas.				Beans.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	889	13,335	15.0	20,616	13	156	12.0	374
Brant	222	2,997	13.5	4,109	210	3,717	17.7	8,846
Bruce	8,152	108,422	13.3	178,571	117	1,544	13.2	3,659
Carleton	735	10,731	14.6	18,940	263	2,472	9.4	6,402
Dufferin	2,585	34,122	13.2	50,501	21	252	12.0	567
Dundas	110	1,815	16.5	2,610	64	960	15.0	2,525
Durham	7,254	89,950	12.4	130,967	257	2,904	11.3	6,824
Elgin	1,005	15,678	15.6	22,404	4,064	64,618	5.9	169,299
Essex	132	2,640	20.0	5,280	336	4,032	12.0	10,443
Frontenac	399	3,990	10.0	6,093	219	2,409	11.0	6,239
Glengarry	324	4,666	14.4	7,167	98	1,098	11.2	2,734
Grenville	186	3,013	16.2	4,110	115	1,242	10.8	3,204
Grey	9,303	125,591	13.5	191,401	112	896	8.0	2,168
Haldimand	763	11,750	15.4	16,274	47	644	13.7	1,443
Haliburton	213	2,492	11.7	3,302	29	342	11.8	811
Halton	561	9,986	17.8	12,483	31	363	11.7	998
Hastings	1,449	17,243	11.9	28,882	229	3,366	14.7	9,391
Huron	3,798	60,768	16.0	97,715	3,925	60,053	15.3	142,926
Kent	988	16,302	16.5	26,898	11,536	211,109	18.3	462,329
Lambton	690	10,350	15.0	15,960	204	2,652	13.0	6,259
Lanark	1,016	11,887	11.7	16,975	323	4,651	14.4	11,581
Leeds	146	1,752	12.0	2,483	94	1,222	13.0	3,031
Lennox and Add.	630	7,371	11.7	11,948	96	1,152	12.0	2,845
Lincoln	331	3,972	12.0	4,766	262	4,323	16.5	11,629
Manitoulin	1,200	14,400	12.0	21,240	8	80	10.0	200
Middlesex	1,023	19,130	18.7	28,121	286	5,148	18.0	12,973
Muskoka	551	8,485	15.4	13,831	22	275	12.5	649
Nipissing	753	11,144	14.8	19,769	20	200	10.0	600
Norfolk	950	11,400	12.0	22,800	419	6,914	16.5	15,695
Northumberland	2,788	28,995	10.4	40,332	329	4,540	13.8	10,533
Ontario	4,077	51,370	12.6	75,719	115	1,150	10.0	2,898
Oxford	439	6,585	15.0	8,956	258	3,096	12.0	7,926
Parry Sound	1,213	20,257	16.7	33,465	11	110	10.0	330
Peel	1,691	24,012	14.2	31,216	95	950	10.0	2,309
Perth	2,287	41,852	18.3	57,756	64	640	10.0	1,600
Peterborough	5,307	65,807	12.4	102,461	86	1,290	15.0	3,225
Prescott	339	5,051	14.9	8,536	224	3,024	13.5	7,530
Prince Edward	4,819	59,756	12.4	90,650	114	1,140	10.0	3,032
Rainy River and Kenora	99	1,683	17.0	3,060	1	10	10.0	30
Renfrew	9,835	86,548	8.8	145,920	312	2,995	9.6	8,266
Russell	447	6,526	14.6	11,421	107	1,733	16.2	4,038
Simcoe	7,896	115,282	14.6	166,467	142	1,690	11.9	3,819
Stormont	151	1,389	9.2	2,214	75	863	11.5	2,106
Sudbury	1,078	10,996	10.2	19,518	21	231	11.0	578
Thunder Bay	131	2,397	18.3	4,195	3	30	10.0	60
Timiskaming	1,530	35,343	23.1	59,058	12	144	12.0	432
Victoria	3,649	49,626	13.6	71,809	182	2,730	15.0	7,508
Waterloo	1,203	18,045	15.0	25,949	47	705	15.0	1,622
Welland	72	1,512	21.0	2,257	613	7,479	12.2	19,819
Wellington	4,706	75,767	16.1	119,712	45	450	10.0	1,134
Wentworth	381	7,239	19.0	8,687	93	1,581	17.0	3,905
York	5,468	89,675	16.4	129,849	140	2,156	15.4	5,713
The Province								
1921	105,964	1,441,095	13.6	2,205,423	26,509	427,531	16.1	1,005,057
1920	109,187	2,209,523	20.2	4,270,938	22,744	380,499	16.7	1,097,137
Annual Averages								
1912–1921	134,576	2,203,352	16.4	3,797,312	58,729	806,805	13.7	2,866,760
1902–1911	389,104	7,056,642	18.1	5,275,196	50,006	854,999	17.1	1,263,012
1892–1901	769,819	14,242,404	18.5	7,613,480	51,6 4	875,597	17.0	818,381
1882–1891	668,962	13,908,658	20.8	8,573,501	26,201	469,393	17.9	545,087
1882–1921	490,615	9,352,764	19.1	6,314,872	46,648	751,698	16.1	1,373,310

RYE AND BUCKWHEAT

TABLE X.—Showing by County Municipalities of Ontario the area, produce and market value of Rye and Buckwheat for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Rye.				Buckwheat.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	108	2,160	20.0	1,836	101	2,444	24.2	1,955
Brant	7,508	121,630	16.2	100,588	1,773	37,056	20.9	27,384
Bruce	231	3,812	16.5	3,202	2,619	57,094	21.8	40,537
Carleton	1,352	16,900	12.5	14,466	4,653	110,741	23.8	92,247
Dufferin	2,739	42,181	15.4	33,956	2,872	57,153	19.9	41,779
Dundas	140	2,170	15.5	1,953	1,977	49,227	24.9	40,268
Durham	10,271	123,252	12.0	101,560	6,034	139,989	23.2	103,732
Elgin	3,137	50,192	16.0	41,810	1,506	30,572	20.3	24,121
Essex	1,561	25,132	16.1	22,116	228	4,606	20.2	3,478
Frontenac	1,027	9,243	9.0	8,411	1,454	27,481	18.9	21,985
Glengarry	73	876	12.0	701	584	14,133	24.2	10,458
Grenville	148	2,087	14.1	1,670	3,442	72,282	21.0	56,091
Grey	344	6,192	18.0	5,077	3,336	74,059	22.2	55,100
Haldimand	848	10,430	12.3	8,866	2,040	37,944	18.6	28,079
Haliburton	260	2,990	11.5	2,467	414	8,197	19.8	6,328
Halton	365	5,074	13.9	4,176	973	24,325	25.0	17,563
Hastings	5,411	79,542	14.7	69,202	6,587	171,262	26.0	129,817
Huron	451	8,434	18.7	7,026	4,868	123,160	25.3	90,030
Kent	1,634	31,209	19.1	26,528	529	12,114	22.9	9,352
Lambton	231	4,158	18.0	3,326	268	5,360	20.0	3,929
Lanark	811	11,273	13.9	8,613	3,408	81,110	23.8	57,750
Leeds	359	4,775	13.3	4,001	1,703	39,850	23.4	31,123
Lennox and Add.	696	10,440	15.0	8,811	4,701	123,166	26.2	92,128
Lincoln	558	8,816	15.8	7,247	239	3,585	15.0	2,466
Manitoulin	107	1,605	15.0	1,284	43	860	20.0	688
Middlesex	703	13,849	19.7	10,844	654	15,696	24.0	11,835
Muskoka	185	2,757	14.9	2,206	174	3,410	19.6	2,704
Nipissing	247	2,890	11.7	2,312	73	1,511	20.7	1,197
Norfolk	20,203	294,964	14.6	244,230	7,328	170,010	23.2	120,877
Northumberland	12,404	171,175	13.8	138,652	12,993	313,131	24.1	222,010
Ontario	9,336	132,571	14.2	111,757	11,096	230,797	20.8	166,866
Oxford	3,454	55,609	16.1	44,710	1,961	42,750	21.8	32,362
Parry Sound	62	831	13.4	716	83	1,826	22.0	1,430
Peel	3,490	56,538	16.2	45,513	1,140	23,826	20.9	18,155
Perth	140	2,240	16.0	1,830	890	20,831	23.4	14,998
Peterborough	4,210	51,362	12.2	40,473	4,377	101,984	23.3	68,839
Prescott	69	1,049	15.2	944	509	8,042	15.8	6,032
Prince Edward	3,841	51,085	13.3	44,085	6,181	114,967	18.6	85,650
Rainy River and Kenora	74	1,332	18.0	1,106	10	200	20.0	150
Renfrew	4,755	54,683	11.5	45,660	2,703	42,707	15.8	31,859
Russell	88	1,320	15.0	1,122	1,154	22,272	19.3	17,818
Simcoe	8,248	119,596	14.5	96,275	14,625	320,288	21.9	231,568
Stormont	20	290	14.5	232	1,733	40,206	23.2	32,165
Sudbury	97	1,455	15.0	1,237	78	1,950	25.0	1,463
Thunder Bay	160	3,200	20.0	2,400	18	360	20.0	270
Timiskaming	68	1,360	20.0	1,020	35	875	25.0	656
Victoria	1,615	23,095	14.3	18,037	6,370	161,798	25.4	119,569
Waterloo	1,755	33,872	19.3	27,369	1,915	44,811	23.4	33,608
Welland	577	7,616	13.2	6,809	1,155	21,137	18.3	18,009
Wellington	678	12,001	17.7	9,985	5,266	134,810	25.6	103,130
Wentworth	996	16,932	17.0	15,239	1,490	32,631	21.9	25,354
York	5,023	77,354	15.4	63,430	7,581	173,605	22.9	126,037
The Province:								
1921	122,868	1,775,599	14.5	1,467,086	147,944	3,354,201	22.7	2,482,999
1920	133,090	2,249,880	17.7	3,336,240	143,204	3,190,478	22.3	3,367,161
Annual Averages								
1912–1921	132,760	2,207,966	16.6	2,459,189	188,094	3,942,591	21.0	3,721,788
1902–1911	112,424	1,877,432	16.7	1,129,754	131,168	2,871,668	21.9	1,503,428
1892–1901	129,188	2,088,786	16.2	937,885	131,005	2,450,389	18.7	949,189
1882–1891	103,636	1,683,211	16.2	1,010,057	69,230	1,413,900	20.4	586,472
1882–1921	119,502	1,964,349	16.4	1,384,221	129,874	2,669,637	20.6	1,690,219

FLAX AND MIXED GRAINS.

TABLE XI.—Showing by County Municipalities of Ontario the area, produce, and market value of Flax and Mixed Grains for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Flax.				Mixed Grains.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	15	90	6.0	216	932	19,945	21.4	15,956
Brant	27	162	6.0	324	9,244	257,908	27.9	156,550
Bruce	350	3,780	10.8	7,560	21,879	564,478	25.8	380,458
Carleton	71	426	6.0	852	9,480	262,596	27.7	181,454
Dufferin	143	858	6.0	1,716	21,042	507,112	24.1	313,902
Dundas	10	90	9.0	180	15,089	380,243	25.2	267,311
Durham	201	1,608	8.0	3,216	27,454	669,878	24.4	410,635
Elgin	39	234	6.0	468	9,557	280,976	29.4	170,552
Essex	11	66	6.0	132	3,813	115,915	30.4	65,724
Frontenac	31	248	8.0	496	4,430	97,460	22.0	67,052
Glengarry	.....	.....	....	.....	1,186	27,278	23.0	19,095
Grenville	39	273	7.0	546	4,171	75,912	18.2	52,911
Grey	552	5,189	9.4	9,236	32,162	923,049	28.7	594,444
Haldimand	69	414	6.0	869	6,579	159,870	24.3	94,643
Haliburton	7	42	6.0	84	313	6,197	19.8	4,102
Halton	19	114	6.0	228	10,666	317,847	29.8	218,997
Hastings	69	414	6.0	828	10,970	286,317	26.1	198,990
Huron	2,042	23,075	11.3	43,381	33,986	934,615	27.5	618,715
Kent	58	406	7.0	836	10,145	305,365	30.1	159,706
Lambton	781	4,842	6.2	8,958	10,626	275,213	25.9	185,218
Lanark	61	488	8.0	976	8,328	180,718	21.7	129,033
Leeds	13	104	8.0	208	5,221	100,765	19.3	69,830
Lennox and Add.	41	410	10.0	820	8,558	217,373	25.4	145,205
Lincoln	18	108	6.0	216	2,984	70,721	23.7	44,554
Manitoulin	30	180	6.0	360	1,939	37,423	19.3	26,982
Middlesex	669	5,352	8.0	10,704	12,962	373,306	28.8	229,210
Muskoka	8	48	6.0	96	909	20,725	22.8	14,425
Nipissing	.....	.....	....	.....	819	18,018	22.0	12,613
Norfolk	16	128	8.0	256	5,079	142,720	28.1	88,915
Northumberland	36	360	10.0	720	19,379	461,220	23.8	303,022
Ontario	102	918	9.0	1,836	37,159	1,003,293	27.0	689,262
Oxford	155	1,550	10.0	3,100	21,684	565,952	26.1	387,111
Parry Sound	7	35	5.0	70	1,576	41,922	26.6	29,974
Peel	34	238	7.0	476	12,921	341,114	26.4	232,299
Perth	267	2,670	10.0	5,474	22,136	573,322	25.9	373,233
Peterborough	23	138	6.0	276	6,077	155,571	25.6	112,322
Prescott	8	48	6.0	96	1,186	30,717	25.9	21,195
Prince Edward	41	328	8.0	656	5,397	126,830	23.5	87,259
Rainy River and Kenora	110	1,408	12.8	2,816	220	7,876	35.8	4,962
Renfrew	137	822	6.0	1,644	4,958	71,891	14.5	52,409
Russell	29	174	6.0	348	3,290	78,960	24.0	52,903
Simcoe	306	3,060	10.0	7,344	37,133	891,192	24.0	614,031
Stormont	.....	.....	....	.....	4,762	98,097	20.6	77,791
Sudbury	49	294	6.0	735	451	9,020	20.0	6,765
Thunder Bay	7	42	6.0	84	508	16,256	32.0	9,754
Timiskaming	43	344	8.0	1,032	1,418	53,175	37.5	37,435
Victoria	19	152	8.0	304	15,658	389,884	24.9	253,425
Waterloo	131	786	6.0	1,572	29,158	836,835	28.7	513,817
Welland	25	250	10.0	500	2,077	39,255	18.9	28,107
Wellington	518	3,108	6.0	6,402	55,058	1,497,578	27.2	907,532
Wentworth	24	144	6.0	288	12,450	334,905	26.9	207,976
York	73	730	10.0	1,460	33,110	933,702	28.2	639,586
The Province:								
1921	7,534	66,748	8.9	130,995	618,289	16,188,510	26.2	10,579,352
1920	21,053	224,893	10.7	515,983	581,689	25,712,447	44.2	20,556,442
Annual Averages:								
1912–1921	9,940	.....	....	.....	524,500	19,031,019	36.3	15,645,948
1907–1911	10,652	.....	....	.....	471,545	15,772,739	33.4	8,674,687
1907–1921	10,177	.....	....	.....	506,848	17,944,926	35.4	13,322,194

No estimates of yields of flax were made previous to 1918. The average for the four years, 1918–21, was 14,557 acres, yielding 154,331 bushels, valued at $635,592.

CORN.*

TABLE XII.—Showing by County Municipalities of Ontario, the area, produce, and market value of Corn for husking and for fodder for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Corn for Husking.				Corn for Silo.			
	Acres.	Bushels (in the ear)	Per acre	Market value.	Acres.	Tons green.	Per acre.	Market value.
				$				$
Algoma	50	1,250	25.0	684	83	637	7.67	3,185
Brant	3,051	205,943	67.5	100,500	8,568	99,560	11.62	497,800
Bruce	436	17,440	40.0	8,598	8,639	92,524	10.71	462,620
Carleton	743	37,150	50.0	19,281	17,598	237,573	13.50	1,187,865
Dufferin	107	5,350	50.0	2,638	1,203	11,128	9.25	55,640
Dundas	1,706	83,594	49.0	40,877	12,652	132,340	10.46	661,700
Durham	1,080	62,964	58.3	33,245	10,312	106,214	10.30	531,070
Elgin	17,155	1,384,409	80.7	624,368	19,155	181,973	9.50	909,865
Essex	73,696	6,499,987	88.2	2,034,496	7,560	88,225	11.67	441,125
Frontenac	2,050	159,695	77.9	86,395	6,280	67,510	10.75	337,550
Glengarry	821	41,050	50.0	20,730	6,629	88,365	13.33	441,825
Grenville	1,398	82,622	59.1	38,337	7,417	72,167	9.73	360,835
Grey	358	14,320	40.0	6,902	11,386	120,008	10.54	600,040
Haldimand	1,807	126,490	70.0	60,715	3,811	35,747	9.38	178,735
Haliburton	159	6,201	39.0	3,411	220	1,760	8.00	8,800
Halton	455	35,490	78.0	17,142	5,336	70,915	13.29	354,575
Hastings	3,880	237,456	61.2	123,952	14,502	149,371	10.30	746,855
Huron	1,007	75,525	75.0	36,479	12,753	154,566	12.12	772,830
Kent	62,363	5,606,434	89.9	2,023,923	11,865	102,039	8.60	510,195
Lambton	17,542	1,501,595	85.6	726,772	18,200	168,350	9.25	841,750
Lanark	1,072	53,600	50.0	27,765	9,825	120,356	12.25	601,780
Leeds	3,387	253,348	74.8	128,701	11,757	146,963	12.50	734,815
Lennox and Add	1,940	117,952	60.8	63,576	6,113	70,300	11.50	351,500
Lincoln	3,458	262,116	75.8	133,679	4,715	55,213	11.71	276,065
Manitoulin	34	1,360	40.0	732	379	5,306	14.00	26,530
Middlesex	8,586	619,909	72.2	283,918	27,208	355,336	13.06	1,776,680
Muskoka	167	7,014	42.0	3,451	383	3,639	9.50	18,195
Nipissing	20	600	30.0	300	15	150	10.00	750
Norfolk	15,707	1,218,863	77.6	560,677	11,018	94,975	8.62	474,875
Northumberland	2,229	157,145	70.5	80,615	11,674	122,344	10.48	611,720
Ontario	722	36,100	50.0	17,906	14,387	165,451	11.50	827,255
Oxford	3,415	257,491	75.4	122,566	31,309	389,797	12.45	1,948,985
Parry Sound	82	5,740	70.0	2,824	156	2,229	14.29	11,145
Peel	275	12,375	45.0	5,977	5,784	65,417	11.31	327,085
Perth	393	25,073	63.8	11,860	13,004	163,330	12.56	816,650
Peterborough	396	17,820	45.0	9,053	7,604	97,863	12.87	489,315
Prescott	1,682	82,418	49.0	44,506	6,882	86,025	12.50	430,125
Prince Edward	5,352	289,008	54.0	148,839	6,277	43,939	7.00	219,695
Rainy River and Kenora	22	836	38.0	334	21	168	8.00	840
Renfrew	773	23,190	30.0	11,757	5,163	53,592	10.38	267,960
Russell	570	28,500	50.0	15,504	6,962	88,766	12.75	443,830
Simcoe	1,235	59,651	48.3	30,780	11,574	136,342	11.78	681,710
Stormont	1,268	68,852	54.3	34,839	7,227	87,230	12.07	436,150
Sudbury	13	390	30.0	195	36	540	15.00	2,700
Thunder Bay	7	175	25.0	70	.....	.....	.....	.....
Timiskaming	9	270	30.0	135	2	24	12.00	120
Victoria	381	22,860	60.0	11,681	8,632	110,749	12.83	553,745
Waterloo	363	26,318	72.5	12,659	10,304	147,141	14.28	735,705
Welland	5,661	382,118	67.5	189,913	5,533	48,026	8.68	240,130
Wellington	180	9,000	50.0	4,293	8,880	106,560	12.00	532,800
Wentworth	848	59,954	70.7	29,437	7,322	78,785	10.76	393,925
York	573	28,650	50.0	14,468	14,028	187,554	13.37	937,770
The Province:								
1921	250,684	20,313,661	81.0	8,012,455	438,343	5,015,082	11.44	25,075,410
1920	243,909	19,372,277	79.4	12,867,119	449,176	4,668,054	10.39	23,340,270
Annual Averages								
1912–1921	262,989	18,126,041	68.9	11,287,114	424,672	4,315,930	10.16	15,936,749
1902–1911	325,515	22,988,755	70.6	8,780,681	236,330	2,731,936	11.56	5,652,083
1892–1901	294,076	21,218,057	72.2	5,314,705	157,611	1,777,533	11.28	3,555,065
1892–1921	294,193	20,777,617	70.6	8,460,833	272,871	2,941,799	10.78	8,381,299

*The combined average area for corn for the ten years 1882-1891 was 195,878 acres, the average value of the produce for the same period being $3,704,614. The combined average for corn for the forty years 1882-1821 is 474,267 acres, the average value of the produce for the same period being $13,557,753.

POTATOES AND TURNIPS.

TABLE XIII.—Showing by County Municipalities of Ontario, the area, produce, and market value of Potatoes and Turnips for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Potatoes.				Turnips.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	1,310	199,382	152.2	163,892	411	118,779	289	32,664
Brant	2,309	179,640	77.8	197,604	2,061	640,971	311	176,267
Bruce	4,160	366,912	88.2	286,925	2,415	869,400	360	239,085
Carleton	4,495	363,646	80.9	357,828	706	197,680	280	54,362
Dufferin	5,224	564,714	108.1	351,817	2,023	843,591	417	231,988
Dundas	1,640	137,924	84.1	136,683	80	23,040	288	6,336
Durham	3,360	324,912	96.7	272,926	2,442	617,826	253	169,902
Elgin	2,426	196,506	81.0	228,340	185	50,875	275	13,991
Essex	2,337	135,546	58.0	160,486	32	9,600	300	2,640
Frontenac	3,371	320,245	95.0	319,284	226	33,900	150	9,323
Glengarry	2,139	147,805	69.1	152,978	163	32,600	200	8,965
Grenville	2,348	224,234	95.5	200,017	102	31,926	313	8,780
Grey	6,530	663,448	101.6	472,375	3,295	1,205,970	366	331,642
Haldimand	1,041	47,157	45.3	51,873	36	8,100	225	2,227
Haliburton	657	70,168	106.8	60,836	130	37,700	290	10,367
Halton	1,624	133,168	82.0	124,246	973	371,686	382	102,214
Hastings	5,771	578,831	100.3	584,619	1,184	371,776	314	102,238
Huron	4,003	378,284	94.5	316,624	3,594	1,318,998	367	362,724
Kent	3,134	253,854	81.0	292,694	114	27,588	242	7,587
Lambton	3,142	234,707	74.7	249,494	264	79,200	300	21,780
Lanark	2,506	222,533	88.8	205,175	585	173,745	297	47,780
Leeds	2,557	211,208	82.6	197,691	543	186,249	343	51,218
Lennox and Add	3,187	261,971	82.2	250,182	84	12,600	150	3,465
Lincoln	1,534	111,829	72.9	114,289	54	16,200	300	4,455
Manitoulin	677	105,409	155.7	72,943	184	52,072	283	14,320
Middlesex	6,066	482,854	79.6	508,928	1,247	370,359	297	101,849
Muskoka	1,123	129,707	115.5	130,096	416	123,968	298	34,091
Nipissing	1,298	227,150	175.0	175,814	299	78,637	263	21,625
Norfolk	3,143	193,295	61.5	207,212	580	191,400	330	52,635
Northumberland	4,181	323,191	77.3	290,549	3,169	1,048,939	331	288,458
Ontario	6,255	560,448	89.6	471,897	5,990	2,186,350	365	601,246
Oxford	2,683	243,080	90.6	271,520	3,315	1,239,810	374	340,948
Parry Sound	1,595	217,877	136.6	183,452	602	186,620	310	51,320
Peel	4,747	444,319	93.6	340,793	1,190	345,100	290	94,902
Perth	2,882	267,738	92.9	286,212	2,951	1,094,821	371	301,076
Peterborough	2,249	240,643	107.0	220,670	1,869	560,700	300	154,193
Prescott	2,631	177,066	67.3	181,316	173	38,925	225	10,704
Prince Edward	1,897	95,040	50.1	105,209	87	14,790	170	4,067
Rainy River and Kenora	630	147,357	233.9	92,688	149	70,179	471	19,299
Renfrew	4,456	430,450	96.6	399,027	434	119,350	275	32,821
Russell	1,749	119,632	68.4	127,288	347	95,078	274	26,146
Simcoe	12,623	1,335,513	105.8	910,820	4,670	1,466,380	314	403,255
Stormont	1,606	100,214	62.4	115,046	53	10,600	200	2,915
Sudbury	1,345	235,375	175.0	191,360	356	97,900	275	26,923
Thunder Bay	1,920	369,600	192.5	262,416	337	112,211	333	30,858
Timiskaming	1,181	279,543	236.7	198,196	293	109,875	375	30,216
Victoria	2,400	223,200	93.0	168,293	2,620	875,080	334	240,647
Waterloo	2,925	273,195	93.4	287,948	3,859	1,454,843	377	400,082
Welland	2,054	115,640	56.3	137,380	66	21,384	324	5,881
Wellington	4,728	591,000	125.0	458,616	7,323	2,870,616	392	789,419
Wentworth	4,477	328,164	73.3	350,807	1,353	503,316	372	138,412
York	9,770	814,818	83.4	694,225	5,081	1,646,244	324	452,717
The Province:								
1921	164,096	15,400,142	93.8	13,589,599	70,715	24,265,547	343	6,673,025
1920	157,509	23,961,709	152.1	23,776,530	80,588	40,141,406	498	11,038,887
Annual Averages								
1912–1921	159,117	17,993,800	113.1	16,211,660	89,869	38,378,214	427	6,596,924
1902–1911	153,092	17,355,152	113.4	8,928,246	123,855	54,987,697	444	5,498,770
1892–1901	164,451	18,304,638	111.3	6,150,629	147,080	63,424,431	431	6,342,443
1882–1891	155,449	18,840,683	121.2	8,476,165	104,943	42,981,280	410	4,298,128
1882–1921	158,027	18,123,568	114.7	9,941,675	116,437	49,942,905	429	5,6840.66

MANGELS AND SUGAR BEETS.

TABLE XIV.—Showing by County Municipalities of Ontario the area, produce and market value of Mangels and Sugar Beets for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for various periods.

Counties and Districts.	Mangels.				Sugar Beets.			
	Acres.	Bushels.	Per acre.	Market value.	Acres.	Bushels.	Per acre.	Market value.
				$				$
Algoma	25	6,250	250	1,719	18	4,050	225	1,114
Brant	833	300,713	361	82,696	100	20,000	200	5,500
Bruce	2,219	818,811	369	225,173	68	17,000	250	4,675
Carleton	273	71,526	262	19,670	129	27,993	217	7,698
Dufferin	330	99,000	300	27,225	155	46,500	300	12,787
Dundas	46	16,560	360	4,554	22	4,400	200	1,210
Durham	969	357,561	369	98,329	31	9,300	300	2,558
Elgin	276	93,840	340	25,806	283	113,766	402	31,286
Essex	456	199,728	438	54,925	2,140	984,400	460	270,710
Frontenac	58	14,500	250	3,987	73	14,600	200	4,015
Glengarry	53	15,476	292	4,256	12	1,200	100	330
Grenville	35	10,500	300	2,887	41	8,200	200	2,255
Grey	1,635	542,820	332	149,275	172	55,212	321	15,183
Haldimand	103	39,140	380	10,763	35	12,250	350	3,369
Haliburton	23	6,141	267	1,689	9	1,800	200	495
Halton	734	319,290	435	87,805	85	27,625	325	7,597
Hastings	124	31,744	256	8,730	66	11,550	175	3,176
Huron	2,602	973,148	374	267,616	209	70,224	336	19,312
Kent	390	201,240	516	55,341	14,069	5,543,186	394	1,524,376
Lambton	378	158,760	420	43,659	6,273	2,396,286	382	658,979
Lanark	102	30,294	297	8,331	53	14,734	278	4,052
Leeds	79	26,307	333	7,234	60	12,000	200	3,300
Lennox and Add.	72	11,520	160	3,168	41	6,150	150	1,691
Lincoln	144	64,800	450	17,820	86	33,540	390	9,224
Manitoulin	32	9,344	292	2,570	24	3,600	150	990
Middlesex	841	321,262	382	88,347	1,609	580,849	361	159,733
Muskoka	46	12,190	265	3,352	30	4,800	160	1,320
Nipissing	38	7,600	200	2,090	4	600	150	165
Norfolk	371	176,225	475	48,462	241	90,616	376	24,919
Northumberland	403	129,363	321	35,575	38	11,400	300	3,135
Ontario	1,883	687,295	365	189,006	117	29,250	250	8,044
Oxford	1,457	651,279	447	179,102	179	45,645	255	12,552
Parry Sound	35	12,250	350	3,369	41	12,300	300	3,382
Peel	556	194,600	350	53,515	73	21,900	300	6,022
Perth	2,408	1,083,600	450	297,990	172	51,600	300	14,190
Peterborough	373	90,639	243	24,926	18	3,600	200	990
Prescott	52	13,000	250	3,575	39	7,995	205	2,199
Prince Edward	79	15,800	200	4,345	55	8,250	150	2,269
Rainy River and Kenora	31	12,462	402	3,427	25	8,750	350	2,406
Renfrew	118	23,600	200	6,490	79	10,665	135	2,933
Russell	63	16,632	264	4,574	36	5,400	150	1,485
Simcoe	2,271	808,476	356	222,331	420	92,400	220	25,410
Stormont	42	12,600	300	3,465	26	6,500	250	1,788
Sudbury	60	15,000	250	4,125	23	4,600	200	1,265
Thunder Bay	24	8,400	350	2,310	19	5,700	300	1,567
Timiskaming	18	2,700	150	743	21	3,150	150	866
Victoria	461	167,804	364	46,146	42	11,760	280	3,234
Waterloo	1,915	754,510	394	207,490	424	139,072	328	38,245
Welland	64	26,688	417	7,339	42	19,320	460	5,313
Wellington	2,183	929,958	426	255,738	104	41,600	400	11,440
Wentworth	826	325,444	394	89,497	113	22,600	200	6,215
York	2,616	991,464	379	272,653	123	33,087	269	9,099
The Province:								
1921	31,225	11,909,854	381	3,275,210	28,367	10,712,975	378	2,946,068
1920	36,450	17,174,290	471	4,722,930	36,288	16,497,067	455	4,536,693
Annual Averages:								
1912–1921	45,147	19,038,931	422	2,954,339	23,813	8,931,907	375	1,845,807
1902–1911	70,809	33,245,680	470	2,659,654	*21,132	*8,484,719	*402	*1,027,108
1892–1901	39,984	17,864,726	447	1,429,178				
1882–1891	19,546	8,538,096	437	683,048				
1882–1921	43,872	19,671,858	448	1,931,555	†22,919	†8,782,844	†383	†1,572,907

* 1907-1911. †1907-1921

ALFALFA AND HAY AND CLOVER.

TABLE XV.—Showing by County Municipalities of Ontario the area, produce and market value of Alfalfa, Hay and Clover for the year 1921, together with the comparative totals for the Province for 1920, and the annual average for various periods.

Counties and Districts.	Alfalfa.				Hay and Clover.			
	Acres.	Tons.	Per acre.	Market value.	Acres.	Tons	Per acre.	Market value.
				$				$
Algoma	74	148	2.00	3,108	23,641	24,587	1.04	518,786
Brant	4,301	11,355	2.64	173,732	37,727	58,854	1.56	924,008
Bruce	13,267	29,453	2.22	446,802	135,826	183,365	1.35	2,788,982
Carleton	625	1,563	2.50	34,230	108,753	121,803	1.12	2,984,174
Dufferin	788	2,120	2.69	37,100	68,225	85,964	1.26	1,480,300
Dundas	371	928	2.50	22,894	53,782	36,572	.68	981,227
Durham	414	1,139	2.75	23,919	56,730	61,836	1.09	1,327,001
Elgin	1,478	4,020	2.72	68,621	78,232	91,531	1.17	1,449,851
Essex	5,173	13,864	2.68	229,449	59,273	61,644	1.04	1,002,331
Frontenac	973	2,024	2.08	48,495	87,691	55,245	.63	1,372,286
Glengarry	144	336	2.33	7,056	65,173	69,083	1.06	1,566,112
Grenville	120	240	2.00	5,863	55,512	31,642	.57	808,770
Grey	17,338	43,172	2.49	696,364	175,282	224,361	1.28	3,796,188
Haldimand	17,727	42,190	2.38	611,333	71,312	97,697	1.37	1,444,939
Haliburton	47	94	2.00	2,256	13,929	10,447	.75	286,979
Halton	7,736	21,661	2.80	411,559	42,623	53,279	1.25	1,033,080
Hastings	5,618	11,236	2.00	275,057	111,271	94,580	.85	2,523,394
Huron	9,172	23,480	2.56	350,556	140,173	194,840	1.39	2,996,639
Kent	4,126	13,698	3.32	235,332	67,391	69,413	1.03	1,131,432
Lambton	12,045	40,110	3.33	630,529	94,954	96,853	1.02	1,482,819
Lanark	772	1,575	2.04	37,895	79,083	54,567	.69	1,418,742
Leeds	562	1,169	2.08	29,739	80,390	39,391	.49	1,049,770
Lennox and Add.	1,879	4,303	2.29	98,969	76,189	50,285	.66	1,245,559
Lincoln	9,022	23,006	2.55	469,092	45,511	59,164	1.30	1,154,881
Manitoulin	74	206	2.78	5,356	22,957	13,085	.57	310,769
Middlesex	4,904	13,829	2.82	252,518	123,280	141,772	1.15	2,405,871
Muskoka	22	44	2.00	880	28,215	22,572	.80	541,277
Nipissing	20	30	1.50	705	24,641	13,799	.56	360,430
Norfolk	2,096	5,806	2.77	96,380	58,524	76,081	1.30	1,198,276
Northumberland	4,079	8,158	2.00	195,792	68,559	67,188	.98	1,668,950
Ontario	1,187	3,264	2.75	61,135	75,933	103,269	1.36	1,929,065
Oxford	3,769	11,382	3.02	178,697	89,620	134,430	1.50	2,125,338
Parry Sound	36	72	2.00	1,814	34,767	28,161	.81	752,462
Peel	10,626	31,347	2.95	546,378	50,548	68,240	1.35	1,279,500
Perth	1,400	3,556	2.54	55,723	112,626	168,939	1.50	2,596,592
Peterborough	894	1,922	2.15	49,011	50,828	43,712	.86	1,177,601
Prescott	144	312	2.17	5,616	71,254	73,392	1.03	1,533,893
Prince Edward	4,218	8,436	2.00	220,939	45,542	39,166	.86	998,733
Rainy River and Kenora	84	151	1.80	2,265	21,609	20,961	.97	368,075
Renfrew	285	641	2.25	17,628	101,694	87,457	.86	2,314,112
Russell	64	160	2.50	2,880	56,116	67,339	1.20	1,471,357
Simcoe	3,159	7,171	2.27	137,038	126,838	150,937	1.19	2,959,875
Stormont	217	543	2.50	13,396	49,561	31,223	.63	781,512
Sudbury	15	23	1.50	587	27,427	16,730	.61	438,159
Thunder Bay	73	146	2.00	2,920	19,350	24,381	1.26	481,037
Timiskaming	43	54	1.25	1,270	23,696	25,829	1.09	607,498
Victoria	607	1,214	2.00	26,708	59,819	53,837	.90	1,265,170
Waterloo	3,200	9,984	3.12	177,815	55,353	95,761	1.73	1,639,428
Welland	3,644	8,017	2.20	164,349	56,748	60,720	1.07	1,164,610
Wellington	3,344	8,594	2.57	136,043	129,135	201,451	1.56	3,178,897
Wentworth	8,057	20,143	2.50	353,308	55,443	81,501	1.47	1,433,603
York	7,172	18,289	2.55	366,694	82,899	115,230	1.39	2,442,876
The Province:								
1921	177,205	456,378	2.58	8,023,795	3,551,655	3,954,166	1.11	76,193,216
1920	162,820	399,581	2.45	10,172,434	3,533,740	4,459,094	1.26	109,036,159
Annual Averages:								
1912–1921	168,413	406,540	2.41	6,422,524	3,347,351	4,709,381	1.41	74,803,560
1902–1911	.....	.....	.....	.....	*3,072,288	4,722,662	1.54	47,093,908
1892–1901	.....	.....	.....	.....	*2,520,783	3,650,840	1.45	29,085,813
1882–1891	.....	.....	.....	.....	*2,290,495	3,102,733	1.35	32,086,445
1882–1921	.....	.....	.....	.....	*2,849,833	4,148,039	1.46	47,373,063

*Including Alfalfa.

CARROTS—ALL FIELD CROPS.

TABLE XVI.—Showing by County Municipalities of Ontario, the area, produce and market value of Carrots, and all field crops enumerated in Tables VII. to XVI. for the year 1921, together with the comparative totals for the Province for 1920, and the annual averages for the various periods.

Counties and Districts.	Carrots.				All Field Crops.		
	Acres.	Bushels.	Per acre.	Market Value.	Acres.	Value.	Per acre.
				$		$	$ c.
Algoma	30	4,500	150	1,237	42,753	950,519	22.23
Brant	61	12,200	200	3,355	135,153	3,371,253	24.94
Bruce	40	7,520	188	2,068	361,325	7,459,574	20.65
Carleton	104	13,000	125	3,575	257,221	6,453,038	25.09
Dufferin	13	2,600	200	715	194,963	3,565,150	18.29
Dundas	10	1,500	150	412	123,458	2,651,446	21.48
Durham	30	5,250	175	1,444	208,409	4,168,316	20.00
Elgin	29	7,250	250	1,994	231,247	5,273,199	22.80
Essex	57	14,250	250	3,919	283,475	5,998,891	21.16
Frontenac	59	11,800	200	3,245	160,115	2,940,980	18.37
Glengarry	30	3,000	100	825	132,887	3,014,823	22.69
Grenville	49	7,350	150	2,021	119,520	2,014,354	16.85
Grey	70	16,310	233	4,485	468,765	9,655,641	20.60
Haldimand	10	2,000	200	550	173,173	3,415,371	19.72
Haliburton	10	1,650	165	454	29,599	557,214	18.83
Halton	64	9,600	150	2,640	120,288	3,107,812	25.84
Hastings	65	10,075	155	2,771	290,538	6,520,659	22.44
Huron	23	5,589	243	1,537	427,045	9,090,107	21.29
Kent	60	16,500	275	4,537	362,529	9,536,784	26.31
Lambton	82	16,400	200	4,510	315,131	7,381,135	23.42
Lanark	27	5,400	200	1,485	176,038	3,334,611	18.94
Leeds	36	5,832	162	1,604	170,348	2,948,921	17.31
Lennox and Addington	51	7,650	150	2,104	160,649	3,058,841	19.04
Lincoln	43	8,600	200	2,365	109,939	2,862,126	26.03
Manitoulin	8	1,000	125	275	39,803	635,784	15.97
Middlesex	50	8,000	160	2,200	371,375	9,094,998	24.49
Muskoka	44	8,800	200	2,420	50,614	1,012,718	20.01
Nipissing	27	2,700	100	742	47,208	830,671	17.60
Norfolk	37	10,286	278	2,829	196,862	4,173,424	21.20
Northumberland	41	6,150	150	1,691	237,602	5,091,133	21.43
Ontario	39	7,800	200	2,145	282,965	6,458,395	22.82
Oxford	28	5,600	200	1,540	281,014	7,576,314	26.96
Parry Sound	36	7,200	200	1,980	66,091	1,467,137	22.20
Peel	62	11,780	190	3,239	181,878	4,125,128	22.68
Perth	26	3,900	150	1,072	317,807	7,150,524	22.50
Peterborough	27	5,400	200	1,485	163,828	3,450,161	21.06
Prescott	37	4,625	125	1,272	143,865	3,090,538	21.48
Prince Edward	29	2,900	100	797	129,096	2,604,732	20.18
Rainy River and Kenora	6	1,800	300	495	35,347	694,617	19.65
Renfrew	65	6,500	100	1,788	251,482	4,501,294	17.90
Russell	29	4,640	160	1,276	117,341	2,806,717	23.92
Simcoe	100	11,600	116	3,190	485,745	10,033,738	20.66
Stormont	19	3,040	160	836	103,796	1,963,112	18.91
Sudbury	56	11,200	200	3,080	48,864	883,075	18.07
Thunder Bay	45	9,000	200	2,475	30,267	919,791	30.39
Timiskaming	42	6,720	160	1,848	45,000	1,270,383	28.23
Victoria	49	10,290	210	2,830	199,148	3,897,022	19.57
Waterloo	18	3,600	200	990	200,935	5,632,788	28.03
Welland	32	7,744	242	2,130	128,390	2,681,259	20.88
Wellington	49	14,700	300	4,043	367,207	8,334,518	22.70
Wentworth	61	12,200	200	3,355	156,483	3,936,608	25.16
York	102	25,500	250	7,013	340,492	8,530,537	25.05
The Province:							
1921	2,217	410,501	185	112,888	10,075,073	222,177,881	22.05
1920	2,706	674,101	249	185,378	10,108,272	387,608,619	36.37
Annual Averages:							
1912–1921	2,568	626,100	244	118,422	*9,785,960	*267,211,002	27.31
1902–1911	5,243	1,688,002	322	211,000	9,233,879	156,824,689	16.98
1892–1901	11,163	3,880,538	348	485,068	8,494,796	106,139,762	12.49
1882–1891	10,243	3,659,347	351	457,417	7,517,606	116,195,708	15.48
1882–1921	7,349	2,463,497	335	317,977	8,758,060	161,592,790	18.45

*Including Flax, 1918-1921

PASTURE, FALLOW, ORCHARD, SMALL FRUITS.

TABLE XVII.—Showing by County Municipalities the area in Cleared Pasture, Summer Fallow Orchards and Small Fruits in 1921, together with totals for the Province for the past five years.

Counties and Districts.	Cleared Pastures.	Summer-fallow.	Orchard.	Small Fruits.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.
Algoma	8,464	913	351	80	9,808
Brant	27,109	3,538	4,798	545	35,990
Bruce	157,944	15,285	7,429	425	181,083
Carleton	95,369	3,071	1,626	216	100,282
Dufferin	59,699	5,995	2,501	115	68,310
Dundas	44,502	542	1,867	197	47,108
Durham	67,868	6,436	7,946	420	82,670
Elgin	92,858	5,652	7,658	1,032	107,200
Essex	47,851	4,396	6,285	1,418	59,950
Frontenac	77,678	862	1,662	179	80,381
Glengarry	50,794	129	1,059	88	52,070
Grenville	52,532	551	1,484	177	54,744
Grey	158,262	12,552	10,374	451	181,639
Haldimand	40,182	9,321	5,066	337	54,906
Haliburton	14,449	395	90	10	14,944
Halton	29,953	3,911	6,766	955	41,585
Hastings	118,877	3,346	6,099	370	128,692
Huron	187,264	10,675	12,060	523	210,522
Kent	87,096	3,869	5,856	1,014	97,835
Lambton	156,495	7,809	12,035	785	177,124
Lanark	122,633	842	1,366	96	124,937
Leeds	81,896	558	1,712	223	84,389
Lennox and Addington	72,450	2,444	2,259	250	77,403
Lincoln	20,934	6,323	14,427	3,226	44,910
Manitoulin	9,121	239	200	16	9,576
Middlesex	240,488	8,656	12,297	1,218	262,659
Muskoka	15,951	615	150	51	16,767
Nipissing	10,004	388	63	40	10,495
Norfolk	44,000	7,275	9,280	1,912	62,467
Northumberland	77,158	4,820	14,158	576	96,712
Ontario	69,761	5,846	5,843	573	82,023
Oxford	89,240	4,172	8,671	771	102,854
Parry Sound	18,229	863	160	69	19,321
Peel	57,267	8,084	5,497	729	71,577
Perth	106,480	9,778	6,198	411	122,867
Peterborough	72,744	5,199	2,045	178	80,166
Prescott	51,615	411	823	111	52,960
Prince Edward	43,648	1,800	8,442	584	54,474
Rainy River and Kenora	6,103	449	10	24	6,586
Renfrew	95,268	3,611	911	151	99,941
Russell	33,749	363	511	86	34,709
Simcoe	112,918	34,618	8,956	717	157,209
Stormont	45,717	350	1,378	58	47,503
Sudbury	8,753	757	21	26	9,557
Thunder Bay	3,640	283	23	28	3,974
Timiskaming	5,518	576	25	14	6,133
Victoria	64,148	4,244	2,163	114	70,669
Waterloo	32,622	5,859	4,578	430	43,489
Welland	28,971	9,236	6,531	1,299	46,037
Wellington	96,048	10,344	5,522	346	112,260
Wentworth	32,129	6,662	8,142	1,717	48,650
York	57,549	15,364	7,547	794	81,254
The Province:					
1921	3,401,998	260,277	242,921	26,175	3,931,371
1920	3,432,620	216,377	248,395	25,635	3,923,027
1919	3,499,802	276,337	257,006	25,244	4,058,389
1918	3,561,754	248,463	265,678	24,596	4,100,491
1917	3,509,945	232,679	280,326	21,964	4,044,914

MARKET PRICES.

TABLE XVIII.—The following table shows by counties the average prices of agricultural products for 1921, together with the average price for 1920, and the annual averages for various periods.

Counties and Districts.	Fall Wheat per bush.	Spring Wheat, per bush.	Barley, per bush.	Oats, per bush.	Peas, per bush.	Beans, per bush.	Rye, per bush.	Buckwheat per bush.	Corn (in car), per bush.	Hay, per ton.	Potatoes per bush.
	cts.	cts.	cts.	cts.	cts.	$ c.	cts.	cts.	cts.	$ c.	cts.
Algoma	120.0	115.6	79.2	62.5	154.6	2 40	85.0	80.0	54.7	21 10	82.2
Brant	110.8	106.3	67.0	51.1	137.1	2 38	82.7	73.9	48.8	15 70	110.0
Bruce	110.7	108.2	64.3	52.9	164.7	2 37	84.0	71.0	49.3	15 21	78.2
Carleton	111.4	120.0	80.6	56.0	176.5	2 59	85.6	83.3	51.9	24 50	98.4
Dufferin	107.0	107.0	61.8	44.6	148.0	2 25	80.5	73.1	49.3	17 22	62.3
Dundas	112.5	120.0	80.0	60.7	143.8	2 63	90.0	81.8	48.9	26 83	99.1
Durham	110.7	103.2	65.5	50.2	145.6	2 35	82.4	74.1	52.8	21 46	84.0
Elgin	109.4	105.3	67.4	50.6	142.9	2 62	83.3	78.9	45.1	15 84	116.2
Essex	106.4	104.5	53.7	36.2	200.0	2 59	88.0	75.5	31.3	16 26	118.4
Frontenac	112.7	111.2	74.5	56.0	152.7	2 59	91.0	80.0	54.1	24 84	99.7
Glengarry	115.0	111.0	74.6	53.5	153.6	2 49	80.0	74.0	50.5	22 67	103.5
Grenville	117.0	119.1	75.3	61.2	136.4	2 58	80.0	77.6	46.4	25 56	89.2
Grey	110.3	105.3	64.1	47.7	152.4	2 42	82.0	74.4	48.2	16 92	71.2
Haldimand	112.0	107.9	63.4	48.7	138.5	2 24	85.0	74.0	48.0	14 79	110.0
Haliburton	116.7	105.7	77.2	63.2	132.5	2 37	82.5	77.2	55.0	27 47	86.7
Halton	110.6	104.9	62.9	48.6	125.0	2 75	82.3	72.2	48.3	19 39	93.3
Hastings	111.1	107.5	72.7	60.1	167.5	2 79	87.0	75.8	52.2	26 68	101.0
Huron	110.3	104.6	65.7	49.1	160.8	2 38	83.3	73.1	48.3	15 38	83.7
Kent	109.6	105.7	56.4	38.8	165.0	2 19	85.0	77.2	36.1	16 30	115.3
Lambton	110.6	110.0	61.5	44.0	154.2	2 36	80.0	73.3	48.4	15 31	106.3
Lanark	110.5	116.1	73.8	54.7	142.8	2 49	76.4	71.2	51.8	26 00	92.2
Leeds	113.0	115.6	77.5	61.9	141.7	2 48	83.8	78.1	50.8	26 65	93.6
Lennox and Add.	112.7	113.6	71.3	55.3	162.1	2 47	84.4	74.8	53.9	24 77	95.5
Lincoln	110.8	103.9	68.1	50.6	120.0	2 69	82.2	68.8	51.0	19 52	102.2
Manitoulin	120.0	115.5	78.5	66.3	147.5	2 50	80.0	80.0	53.8	23 75	69.2
Middlesex	111.7	106.1	66.9	45.3	147.0	2 52	78.3	75.4	45.8	16 97	105.4
Muskoka	125.0	110.0	75.8	62.3	163.0	2 36	80.0	79.3	49.2	23 98	100.3
Nipissing	110.0	108.5	73.2	54.7	177.4	3 00	80.0	79.2	50.0	26 12	77.4
Norfolk	109.4	105.0	64.4	50.7	200.0	2 27	82.8	71.1	46.0	15 75	107.2
Northumberland	110.8	106.5	66.7	51.6	139.1	2 32	81.0	70.9	51.3	24 84	89.9
Ontario	112.9	102.6	62.5	48.1	147.4	2 52	84.3	72.3	49.6	18 68	84.2
Oxford	109.7	104.0	69.8	53.8	136.0	2 56	80.4	75.7	47.6	15 81	111.7
Parry Sound	115.0	112.0	73.6	64.3	165.2	3 00	86.2	78.3	49.2	26 72	84.2
Peel	109.7	102.6	65.6	48.4	130.0	2 43	80.5	76.2	48.3	18 75	76.7
Perth	110.3	106.8	66.6	51.2	138.0	2 50	81.7	72.0	47.3	15 37	106.9
Peterborough	107.2	101.5	64.6	52.1	155.7	2 50	78.8	67.5	50.8	26 94	91.7
Prescott	116.0	119.3	77.2	53.2	169.0	2 49	90.0	75.0	54.0	20 90	102.4
Prince Edward	110.2	106.9	70.6	55.7	151.7	2 66	86.3	74.5	51.5	25 50	110.7
Rainy River and Kenora	110.0	102.0	70.6	50.5	181.8	3 00	83.0	75.0	40.0	17 56	62.9
Renfrew	113.8	113.4	74.6	57.4	168.6	2 76	83.5	74.6	50.7	26 46	92.7
Russell	120.0	124.0	82.1	56.0	175.0	2 33	85.0	80.0	54.4	21 85	106.4
Simcoe	110.3	104.5	58.3	46.1	144.4	2 26	80.5	72.3	51.6	19 61	68.2
Stormont	120.0	112.5	79.0	59.2	159.4	2 44	80.0	80.0	50.6	25 03	114.8
Sudbury	110.0	114.6	77.4	61.6	177.5	2 50	85.0	75.0	50.0	26 19	81.3
Thunder Bay	120.0	110.0	64.8	48.2	175.0	2 00	75.0	75.0	40.0	19 73	71.0
Timiskaming	120.0	125.0	76.0	54.1	167.1	3 00	75.0	75.0	50.0	23 52	70.9
Victoria	103.1	101.6	66.8	48.3	144.7	2 75	78.1	73.9	51.1	23 50	75.4
Waterloo	111.2	103.7	69.2	53.3	143.8	2 30	80.8	75.0	48.1	17 12	105.4
Welland	117.5	108.8	68.7	54.2	149.3	2 65	89.4	85.2	49.7	19 18	118.8
Wellington	113.2	105.5	67.7	46.9	158.0	2 52	83.2	76.5	47.7	15 78	77.6
Wentworth	114.2	113.2	66.9	46.0	120.0	2 47	90.0	77.7	49.1	17 59	106.9
York	108.5	106.6	63.7	51.5	144.8	2 65	82.0	72.6	50.5	21 20	85.2
The Province:											
1921	110.5	109.4	65.7	50.4	153.0	2 35	82.6	74.0	39.4	19 27	88.2
1920	193.4	183.8	93.8	58.2	193.3	2 88	142.0	105.5	66.4	24 45	99.2
Annual Averages:											
1912–1921	144.5	171.6	86.0	58.5	172.3	2 35	111.4	94.4	62.3	15 88	90.1
1902–1911	83.6	81.2	50.1	36.7	74.8	1 48	60.2	52.4	38.2	9 97	51.4
1892–1901	67.8	67.5	38.5	27.9	53.5	93	44.9	38.7	25.0	7 97	33.6
1882–1891	90.0	89.6	54.5	34.3	61.6	1 16	60.0	41.5	.....	10 34	45.0
1882–1921	94.5	96.7	57.7	41.1	67.5	1 83	70.5	63.3	*40.7	11 42	54.9

* Average for 30 years, 1892-1921.

HORSES AND

TABLE XIX.—Showing by County Municipalities the number and value of Horses and year ending June 15th, 1921, together with the

Counties and Districts.	Horses all ages.				Cattle.	
	Number on hand.	Value.	Horses sold.		Milch Cows on hand.	
			Number.	Value.	Number.	Value.
		$		$		$
Algoma	3,263	404,205	344	45,515	5,236	291,122
Brant	9,297	1,009,061	862	106,797	14,464	911,232
Bruce	24,215	2,548,045	2,864	372,685	32,707	1,734,452
Carleton	17,918	1,964,436	1,562	195,815	41,641	1,978,780
Dufferin	12,054	1,367,686	1,176	157,646	15,452	856,041
Dundas	8,998	906,068	815	97,254	29,893	1,512,586
Durham	13,966	1,518,954	1,345	165,564	18,174	934,325
Elgin	16,506	1,787,860	1,881	237,950	30,855	1,877,527
Essex	19,650	2,162,886	2,004	258,215	20,643	1,180,780
Frontenac	10,759	972,984	810	84,946	31,757	1,143,887
Glengarry	9,244	921,987	782	91,955	29,785	1,176,508
Grenville	7,613	742,089	625	64,060	21,157	890,287
Grey	28,906	3,160,576	2,916	367,691	42,664	2,208,715
Haldimand	11,007	1,215,862	1,076	136,904	15,555	911,523
Haliburton	2,110	220,173	232	26,280	3,752	129,444
Halton	8,464	939,189	742	96,416	13,676	909,726
Hastings	19,400	2,026,336	1,580	188,230	47,858	1,828,178
Huron	31,304	3,564,868	3,885	525,289	38,017	2,239,589
Kent	24,413	2,851,834	2,575	324,600	23,989	1,397,111
Lambton	23,474	2,557,265	2,706	346,709	31,705	1,887,399
Lanark	12,156	1,217,647	992	116,175	26,990	952,207
Leeds	11,684	1,140,772	734	85,462	38,655	1,581,763
Lennox and Addington	11,049	1,141,824	805	102,570	24,830	1,022,996
Lincoln	8,036	897,343	758	93,605	9,972	623,250
Manitoulin	2,591	288,145	250	30,560	4,977	214,608
Middlesex	31,567	3,509,790	3,496	456,097	51,142	3,127,333
Muskoka	3,579	415,012	383	45,435	6,589	309,024
Nipissing	2,917	365,569	233	30,738	6,533	261,320
Norfolk	13,539	1,413,831	1,134	129,790	21,805	1,238,524
Northumberland	16,181	1,701,794	1,383	173,627	26,964	1,179,675
Ontario	19,409	2,169,905	1,911	242,190	25,887	1,438,799
Oxford	20,571	2,268,935	2,132	266,228	49,886	3,224,631
Parry Sound	4,441	540,697	461	60,452	8,037	417,924
Peel	12,611	1,354,459	1,457	189,385	18,922	1,123,967
Perth	23,352	2,468,904	2,454	328,950	35,380	2,070,791
Peterborough	10,937	1,083,847	1,068	122,970	21,062	858,277
Prescott	8,180	877,242	866	108,225	27,597	1,094,773
Prince Edward	8,693	908,853	595	73,870	16,572	706,796
Rainy River and Kenora	2,757	401,140	234	34,775	3,912	210,661
Renfrew	15,340	1,768,639	1,336	181,182	30,304	1,082,762
Russell	7,986	813,389	684	86,000	22,989	954,044
Simcoe	33,086	3,794,609	3,041	414,040	42,340	2,324,466
Stormont	7,755	759,975	575	63,895	27,161	1,037,007
Sudbury	3,564	432,027	350	48,010	6,497	343,042
Thunder Bay	1,557	226,198	210	30,215	3,218	230,087
Timiskaming	2,566	359,011	347	50,730	3,380	212,940
Victoria	13,407	1,469,192	1,351	168,521	20,085	952,832
Waterloo	13,378	1,462,305	1,310	165,307	19,357	1,242,719
Welland	8,610	935,370	745	89,310	12,740	777,522
Wellington	23,696	2,683,910	2,388	313,384	30,966	1,919,892
Wentworth	11,660	1,241,408	1,026	121,894	16,520	1,112,457
York	24,821	2,726,644	2,449	292,266	34,021	2,238,582
The Province:						
1921	694,237	75,680,750	67,940	8,606,379	1,204,270	62,094,883
1920	704,640	89,606,594	76,548	10,647,026	1,170,010	100,429,918
1919	719,569	92,823,683	78,354	10,811,664	1,141,016	101,218,161
1918	732,977	95,710,928	80,984	11,019,354	1,097,039	91,662,681
1917	765,873	99,439,558	83,194	11,442,831	1,069,338	80,774,341

CATTLE.

Cattle on hand June 15, 1921, and the number and value of those sold or slaughtered in the totals for the Province for the past five years.

Cattle.						Counties and Districts.
Other cattle on hand.		Total on hand.		Sold or slaughtered.		
Number.	Value.	Number.	Value.	Number.	Value.	
	$		$		$	
7,513	183,319	12,749	484,441	4,533	158,181	Algoma.
17,069	465,603	31,533	1,376,835	12,655	525,234	Brant.
80,694	2,273,725	113,401	4,008,177	31,715	1,665,214	Bruce.
45,716	900,116	87,357	2,878,896	28,192	873,455	Carleton.
32,918	868,138	48,370	1,724,179	13,556	713,783	Dufferin
16,090	339,326	45,983	1,851,912	14,813	400,986	Dundas.
34,231	860,468	52,405	1,794,793	16,115	737,773	Durham.
37,779	1,075,891	68,634	2,953,418	25,677	1,117,714	Elgin..
22,646	599,911	43,289	1,780,691	16,607	681,174	Essex.
29,744	465,456	61,501	1,609,343	18,336	403,440	Frontenac.
19,051	351,559	48,836	1,528,067	16,630	284,772	Glengarry.
13,978	284,417	35,135	1,174,704	13,209	324,473	Grenville.
93,008	2,506,829	135,672	4,715,544	40,397	2,024,921	Grey.
21,534	520,793	37,089	1,432,316	13,799	569,199	Haldimand.
6,273	96,245	10,025	225,689	3,331	90,190	Haliburton.
20,359	540,823	34,035	1,450,551	11,748	568,232	Halton.
45,962	777,535	93,820	2,605,711	31,342	632,916	Hastings.
90,841	2,586,620	128,858	4,826,201	39,771	2,136,607	Huron.
47,009	1,347,476	70,998	2,744,595	21,356	995,730	Kent.
72,571	2,085,497	104,276	3,972,896	33,918	1,696,189	Lambton.
45,086	719,846	72,076	1,672,053	20,447	593,214	Lanark
27,650	510,159	66,305	2,091,922	18,660	452,601	Leeds.
25,076	472,455	49,906	1,495,451	16,028	380,125	Lennox and Add.
8,924	249,517	18,896	872,767	8,403	341,002	Lincoln.
10,995	219,873	15,972	434,481	3,775	120,054	Manitoulin.
92,560	2,873,330	143,702	6,000,663	50,280	2,308,320	Middlesex.
10,560	212,862	17,149	521,886	5,150	164,692	Muskoka.
10,201	183,324	16,734	444,644	4,299	145,684	Nipissing.
19,189	462,448	40,994	1,700,972	16,040	549,771	Norfolk.
35,109	767,987	62,073	1,947,662	20,796	700,376	Northumberland.
48,974	1,291,724	74,861	2,730,523	23,322	1,071,202	Ontario.
40,120	1,207,886	90,006	4,432,517	35,003	1,407,982	Oxford.
15,424	344,576	23,461	762,500	6,794	274,771	Parry Sound.
25,982	672,738	44,904	1,796,705	16,125	728,095	Peel.
61,614	1,670,517	96,994	3,741,308	30,575	1,342,418	Perth.
33,569	592,151	54,631	1,450,428	15,232	500,439	Peterborough.
20,854	324,941	48,451	1,419,714	15,276	324,464	Prescott.
10,581	237,612	27,153	944,408	9,872	277,212	Prince Edward.
6,320	143,110	10,232	353,771	3,327	108,433	Rainy River and Kenora
56,994	991,806	87,298	2,074,568	22,671	636,257	Renfrew.
17,041	341,404	40,030	1,295,448	14,359	377,913	Russell.
82,884	2,064,950	125,224	4,389,416	33,948	1,610,291	Simcoe.
13,723	281,614	40,884	1,318,621	13,316	267,214	Stormont.
9,632	215,329	16,129	558,371	5,602	169,136	Sudbury.
3,052	79,041	6,270	309,128	2,709	127,877	Thunder Bay.
4,599	118,089	7,979	331,029	2,990	126,551	Timiskaming.
43,520	1,039,613	63,605	1,992,445	17,295	715,433	Victoria.
25,921	729,949	45,278	1,972,668	20,269	1,035,980	Waterloo.
12,318	338,392	25,058	1,115,914	10,794	423,320	Welland.
59,762	1,776,406	90,728	3,696,298	33,226	1,862,022	Wellington.
17,620	511,302	34,140	1,623,759	14,418	635,189	Wentworth.
35,003	991,984	69,024	3,230,566	25,912	1,131,464	York.
						The Province:
1,685,843	41,766,682	2,890,113	103,861,565	944,613	37,509,685	1921.
1,711,817	76,467,572	2,881,827	176,897,490	1,018,770	63,355,503	1920.
1,786,175	82,823,433	2,927,191	184,041,594	1,040,213	65,655,072	1919.
1,770,683	80,596,580	2,867,722	172,259,261	932,691	57,529,269	1918.
1,758,271	69,535,487	2,827,609	150,309,828	903,184	52,893,615	1917.

TABLE XX.—Showing by County Municipalities the number and value of Sheep, Swine slaughtered in the year ending June 15, 1921, together

Counties and Districts	Sheep and Lambs				Swine	
	Number on hand.	Value	Sold or Slaughtered		Number on Hand	Value
			Number	Value		
		$		$		$
Algoma	12,196	73,176	5,796	34,776	4,168	59,852
Brant	8,983	67,373	5,603	39,221	19,132	259,430
Bruce	40,895	307,121	20,618	153,810	47,536	570,907
Carleton	26,787	198,224	13,178	92,246	27,869	384,314
Dufferin	30,130	278,401	14,600	122,202	29,990	346,984
Dundas	5,113	39,217	2,556	15,975	20,806	233,235
Durham	27,875	209,063	12,636	87,820	25,285	283,951
Elgin	25,895	213,375	13,065	100,731	46,212	513,415
Essex	26,360	172,394	13,608	81,648	89,431	1,107,156
Frontenac	15,838	90,435	8,590	46,214	22,976	299,837
Glengarry	9,438	64,933	4,425	27,656	16,700	178,356
Grenville	11,732	78,604	6,230	40,931	15,652	210,050
Grey	66,322	563,074	32,395	252,681	65,252	797,379
Haldimand	17,921	135,483	9,762	70,482	21,449	253,527
Haliburton	7,380	44,280	3,225	22,575	2,213	32,553
Halton	12,982	97,365	6,872	51,540	18,015	222,485
Hastings	40,324	268,961	18,237	118,541	50,743	577,455
Huron	28,163	241,357	15,502	118,435	64,454	796,651
Kent	24,575	177,432	13,445	98,149	94,076	1,073,407
Lambton	27,700	228,248	15,468	118,640	57,416	722,867
Lanark	43,154	292,153	20,728	139,914	21,971	256,402
Leeds	14,857	119,896	7,906	57,951	25,035	316,693
Lennox and Addington	15,566	104,759	7,195	43,170	21,991	302,156
Lincoln	7,584	64,919	4,224	35,186	12,706	180,552
Manitoulin	23,631	129,971	9,720	53,460	5,037	60,192
Middlesex	24,241	209,685	16,830	134,640	55,215	733,255
Muskoka	12,617	86,174	6,312	44,878	3,458	53,288
Nipissing	12,253	61,265	4,337	21,685	5,493	77,232
Norfolk	15,524	109,599	8,207	53,017	29,723	377,185
Northumberland	20,591	162,257	9,848	74,845	34,310	378,782
Ontario	34,920	306,947	17,218	147,214	42,939	500,669
Oxford	11,221	92,124	5,780	44,333	46,065	591,014
Parry Sound	23,338	160,799	9,636	63,019	5,624	78,905
Peel	15,847	126,776	7,733	61,864	24,640	285,824
Perth	12,113	102,961	6,808	51,060	63,539	788,519
Peterborough	17,380	111,753	8,399	54,006	18,879	232,967
Prescott	6,072	35,582	3,300	16,500	16,077	215,110
Prince Edward	13,232	90,375	6,375	42,521	16,613	187,893
Rainy River and Kenora	3,457	25,236	1,698	11,886	3,383	58,323
Renfrew	72,487	479,864	32,586	206,269	25,469	332,116
Russell	7,266	50,862	3,319	23,233	17,571	211,906
Simcoe	62,432	533,169	30,415	243,320	78,887	963,210
Stormont	5,417	32,502	2,500	15,000	18,570	226,368
Sudbury	7,756	51,190	3,937	23,622	5,301	74,214
Thunder Bay	530	5,300	127	1,270	3,290	53,726
Timiskaming	4,397	35,176	1,534	10,738	2,675	42,452
Victoria	28,204	201,377	12,835	91,770	27,448	323,337
Waterloo	9,924	90,209	5,675	43,414	40,275	507,868
Welland	9,098	81,882	4,698	37,584	13,497	199,081
Wellington	39,329	353,961	19,829	161,805	62,964	742,346
Wentworth	11,694	92,032	6,541	55,141	22,600	282,274
York	29,087	258,293	15,026	120,208	53,187	647,818
The Province:						
1921	1,081,828	8,207,564	537,087	3,878,796	1,563,807	19,205,488
1920	1,129,084	16,191,741	493,694	6,131,024	1,614,356	32,253,804
1919	1,101,740	18,128,240	458,952	6,126,881	1,695,487	33,263,051
1918	972,341	15,690,055	449,268	5,877,375	1,656,386	31,140,181
1917	956,986	9,946,030	463,576	4,240,803	1,664,639	21,464,366

AND POULTRY

and Poultry on hand on June 15, 1921, and the number and value of those sold or with the totals for the Province for the past five years.

Swine.		Poultry of all classes.				Counties and Districts.
Sold or slaughtered.		Number on hand.	Value.	Sold or slaughtered.		
Number	Value.			Number.	Value.	
	$		$		$	
4,333	98,792	53,717	51,370	33,684	40,815	Algoma.
27,538	544,151	134,750	126,875	71,176	83,045	Brant.
68,732	1,468,803	375,729	335,959	201,557	244,775	Bruce.
31,066	666,055	279,302	312,472	180,302	275,194	Carleton.
35,438	706,279	164,196	171,164	85,549	112,680	Dufferin.
25,960	489,086	171,521	156,298	83,459	108,275	Dundas.
35,303	656,283	234,257	217,823	120,797	138,279	Durham.
56,607	1,117,422	330,402	310,227	177,707	210,042	Elgin.
89,928	1,983,812	553,693	513,520	273,578	311,415	Essex.
25,053	484,776	145,089	162,763	95,388	135,095	Frontenac.
18,171	363,420	142,921	144,933	82,987	112,322	Glengarry
21,290	412,813	140,933	142,915	75,421	95,350	Grenville.
85,566	1,778,917	438,840	410,753	229,910	273,709	Grey.
29,820	588,647	185,441	176,278	109,281	121,091	Haldimand.
3,383	70,434	25,222	19,015	15,059	15,258	Haliburton.
22,862	488,561	125,170	142,669	85,038	106,901	Halton.
58,032	1,084,618	303,204	244,343	145,199	153,585	Hastings.
89,799	1,822,920	559,977	520,895	274,180	312,044	Huron.
82,672	1,712,639	548,536	498,442	258,819	298,270	Kent.
67,142	1,420,053	512,690	511,236	262,094	363,419	Lambton.
25,834	523,139	172,479	165,225	87,277	104,276	Lanark.
28,017	490,017	177,522	185,753	98,539	130,709	Leeds.
28,310	512,977	165,011	155,383	92,273	102,076	Lennox and Addington.
19,213	384,260	145,381	149,581	96,810	116,787	Lincoln.
5,993	106,675	33,169	31,548	18,044	25,509	Manitoulin.
78,903	1,591,474	600,650	631,968	316,246	411,530	Middlesex.
5,798	132,484	53,515	47,604	30,865	34,549	Muskoka.
5,626	107,513	38,746	32,697	22,483	23,186	Nipissing.
42,871	874,997	252,675	224,282	129,336	137,383	Norfolk.
45,486	828,300	273,752	246,277	133,720	159,470	Northumberland.
55,840	1,141,928	271,818	306,235	161,013	223,726	Ontario.
61,272	1,306,319	348,627	326,243	167,127	183,345	Oxford.
7,741	141,660	59,376	57,334	33,510	41,440	Parry Sound.
33,202	670,016	191,176	218,925	117,848	169,533	Peel.
79,917	1,648,688	391,678	357,748	188,519	216,241	Perth.
25,974	553,246	169,797	153,912	87,857	112,052	Peterborough.
15,973	306,682	129,134	122,794	79,972	95,437	Prescott.
22,015	430,613	118,279	106,584	60,822	76,030	Prince Edward.
4,211	108,896	35,498	38,557	20,656	27,196	Rainy River and Kenora
22,433	447,314	203,424	196,228	113,862	135,605	Renfrew.
17,804	323,499	104,146	101,848	68,644	76,604	Russell.
94,400	1,911,600	452,331	454,045	251,702	334,732	Simcoe.
21,892	454,259	141,737	134,669	74,296	87,606	Stormont.
5,796	144,900	49,175	38,269	29,545	29,320	Sudbury.
3,577	92,108	29,249	27,550	17,398	20,091	Thunder Bay.
3,738	85,974	35,458	35,356	21,126	23,861	Timiskaming.
36,223	795,819	199,032	193,021	102,462	121,459	Victoria.
50,254	1,002,065	201,990	184,604	100,539	114,130	Waterloo.
21,007	457,743	165,620	159,646	102,409	111,533	Welland.
84,621	1,760,117	317,445	333,721	177,960	221,752	Wellington.
31,598	637,648	164,135	185,265	108,209	137,806	Wentworth.
70,958	1,478,055	340,591	395,496	222,518	301,981	York.
						The Province:
1,939,192	39,409,466	11,458,206	11,168,318	6,194,772	7,618,519	1921.
2,101,007	64,079,147	11,005,645	11,787,708	6,253,837	8,001,147	1920.
2,154,317	59,879,582	11,705,809	11,351,364	6,434,693	7,254,051	1919.
2,130,060	46,997,183	12,281,105	9,307,051	6,516,460	5,318,857	1918.
2,137,999	41,609,181	13,606,292	8,517,195	6,806,531	4,554,451	1917.

LIVE STOCK AND

TABLE XXI. Showing by County Municipalities the total value of live stock and poultry numbers of the various classes on hand with

Counties and Districts.	Total value of Live Stock sold or killed.	Horses on hand.				Cattle on other than	
		Stallions, 2 yrs. old and over.	Mares 2 yrs. old and over.	Geldings 2 yrs. old and over	Colts and Fillies under 2 years.	Bulls for breeding	Calves under 1 year.
	$						
Algoma	378,079	23	1,622	1,294	324	232	3,245
Brant	1,298,448	34	4,663	4,004	596	757	7,498
Bruce	3,905,287	95	12,390	8,552	3,178	1,340	25,767
Carleton	2,102,765	131	9,020	6,795	1,972	2,422	18,056
Dufferin	1,812,590	78	6,157	4,558	1,261	744	11,824
Dundas	1,111,576	50	4,367	3,797	784	1,733	6,966
Durham	1,785,719	56	7,120	5,477	1,313	821	12,081
Elgin	2,783,859	55	8,341	7,037	1,073	1,694	14,365
Essex	3,316,264	81	10,456	7,623	1,490	1,161	10,170
Frontenac	1,154,471	50	5,547	4,330	832	2,174	13,861
Glengarry	880,125	95	4,943	3,164	1,042	2,113	8,033
Grenville	937,627	50	3,840	3,074	649	1,363	5,869
Grey	4,697,919	120	14,547	11,083	3,156	1,882	32,214
Haldimand	1,486,323	41	5,585	4,435	946	732	9,657
Haliburton	224,737	16	1,037	814	243	203	2,866
Halton	1,311,650	32	4,193	3,404	835	709	8,098
Hastings	2,177,890	140	9,795	8,173	1,292	3,517	21,922
Huron	4,915,295	106	15,990	11,236	3,972	1,601	29,392
Kent	3,429,388	152	12,272	10,020	1,969	1,206	15,987
Lambton	3,945,010	113	12,274	8,582	2,505	1,265	24,351
Lanark	1,476,718	81	6,257	4,660	1,158	1,511	17,115
Leeds	1,216,740	50	5,850	4,964	820	2,518	11,920
Lennox and Add	1,140,918	53	5,519	4,593	884	1,685	10,590
Lincoln	970,840	37	4,170	3,475	354	437	4,340
Manitoulin	336,258	21	1,332	940	298	221	4,000
Middlesex	4,902,061	128	16,417	11,767	3,255	2,407	30,060
Muskoka	422,038	21	1,809	1,484	265	327	4,617
Nipissing	328,806	49	1,550	1,055	263	555	4,553
Norfolk	1,744,958	48	6,879	5,641	971	1,207	9,027
Northumberland	1,936,618	93	8,022	6,762	1,304	1,776	14,542
Ontario	2,826,260	104	9,963	7,343	1,999	1,327	17,457
Oxford	3,208,207	78	10,421	8,431	1,641	2,749	16,142
Parry Sound	581,342	45	2,253	1,785	358	408	6,060
Peel	1,818,893	57	6,622	4,547	1,385	1,054	10,077
Perth	3,587,357	88	11,772	8,592	2,900	1,785	23,612
Peterborough	1,342,713	67	5,568	4,386	916	1,259	13,463
Prescott	851,308	81	4,328	3,058	713	2,251	9,350
Prince Edward	900,246	27	4,366	3,820	480	1,002	5,256
Rainy R. and Ken	291,186	25	1,307	1,108	317	200	2,785
Renfrew	1,606,627	179	7,958	5,651	1,552	2,570	22,646
Russell	887,249	88	4,074	2,881	943	1,577	7,990
Simcoe	4,513,983	155	16,846	12,862	3,223	2,130	29,774
Stormont	887,974	34	3,962	3,197	562	1,660	5,781
Sudbury	414,988	35	1,724	1,362	443	528	4,833
Thunder Bay	271,561	42	638	798	79	237	1,656
Timiskaming	297,854	26	1,187	1,198	155	206	2,374
Victoria	1,893,002	52	7,051	4,865	1,439	924	15,153
Waterloo	2,360,896	85	6,617	5,254	1,422	1,006	12,747
Welland	1,119,490	36	4,360	3,746	468	646	5,610
Wellington	4,319,080	82	12,072	9,336	2,206	1,399	23,921
Wentworth	1,587,678	35	5,710	5,058	857	755	7,728
York	3,323,974	145	12,312	10,016	2,348	1,773	14,131
The Province:							
1921	97,022,845	3,665	353,075	272,087	65,410	67,759	651,532
1920	152,213,847	3,902	351,517	266,477	82,744	65,757	655,316
1919	149,727,250	4,087	354,677	269,390	91,415	63,189	688,850
1918	126,742,038	4,201	360,119	273,820	94,837	60,563	691,441
1917	114,740,881						

POULTRY ON HAND.

on hand in 1921, together with totals for the Province for the past five years, also the comparative totals for poultry for five years.

hand Milch Cows.		Poultry on hand.				Counties and Districts.
Steers 2 yrs. old and over.	All other Cattle.	Turkeys.	Geese.	Ducks.	Other Fowls.	
893	3,143	2,050	1,401	578	49,688	Algoma.
1,404	7,410	709	3,842	3,633	126,566	Brant.
17,322	36,265	10,934	15,412	15,509	333,874	Bruce.
6,328	18,910	9,878	14,115	8,514	246,795	Carleton.
6,733	13,617	1,955	12,430	5,260	144,551	Dufferin.
225	7,166	6,498	6,133	4,104	154,786	Dundas.
5,789	15,540	1,920	11,112	8,637	212,588	Durham.
5,252	16,468	9,516	8,820	9,920	302,146	Elgin.
2,498	8,817	10,648	20,075	20,813	502,157	Essex.
1,945	11,764	13,422	4,159	4,256	123,252	Frontenac.
494	8,411	8,786	2,194	1,667	130,274	Glengarry.
190	6,556	5,353	4,230	2,402	128,948	Grenville.
17,571	41,341	8,441	20,849	18,390	391,160	Grey.
2,674	8,471	5,450	5,507	5,794	168,690	Haldimand.
726	2,478	919	470	179	23,654	Haliburton.
3,010	8,542	3,204	6,359	3,666	111,941	Halton.
2,890	17,633	7,817	7,455	4,280	283,652	Hastings.
18,833	41,015	7,788	20,092	23,950	508,147	Huron.
10,650	19,166	10,239	18,615	23,172	496,510	Kent.
15,547	31,408	25,085	18,586	19,912	449,107	Lambton.
7,774	18,686	6,712	3,272	2,317	160,178	Lanark.
819	12,393	11,405	3,652	4,586	157,879	Leeds.
2,717	10,084	5,897	2,875	4,060	152,179	Lennox and Addington.
610	3,537	2,546	2,628	3,603	136,604	Lincoln.
2,007	4,767	3,025	1,441	696	28,007	Manitoulin.
18,880	41,213	22,282	16,111	24,659	537,598	Middlesex.
1,332	4,284	763	618	844	51,290	Muskoka.
949	4,144	267	545	760	37,174	Nipissing.
1,018	7,937	5,632	4,520	5,816	236,707	Norfolk.
3,843	14,948	7,484	6,739	6,289	253,240	Northumberland.
8,207	21,983	3,024	14,598	8,987	245,209	Ontario.
4,522	16,707	1,957	8,631	9,408	328,631	Oxford.
2,100	6,856	1,785	1,741	1,433	54,417	Parry Sound.
4,808	10,043	3,010	11,169	6,792	170,205	Peel.
9,273	26,944	1,888	16,210	16,591	356,989	Perth.
4,442	14,405	7,688	6,150	3,373	152,586	Peterborough.
315	8,938	6,869	3,326	2,246	116,693	Prescott.
317	4,006	3,150	2,103	3,636	109,390	Prince Edward.
785	2,550	1,725	1,091	312	32,370	Rainy River and Ken.
9,651	22,127	7,385	8,528	3,422	184,089	Renfrew.
485	6,989	1,448	3,522	2,621	96,555	Russell.
14,776	36,204	11,150	25,348	15,258	400,575	Simcoe.
219	6,063	5,766	3,349	2,670	129,952	Stormont.
734	3,537	1,239	1,300	534	46,102	Sudbury.
175	984	234	421	668	27,926	Thunder Bay.
273	1,746	408	699	973	33,378	Timiskaming.
8,444	18,999	4,974	10,940	6,101	177,017	Victoria.
2,176	9,992	441	5,806	4,583	191,160	Waterloo.
1,026	5,036	2,048	3,277	4,745	155,550	Welland.
9,349	25,093	1,981	19,404	11,293	284,767	Wellington.
1,987	7,150	1,119	5,459	4,252	153,305	Wentworth.
4,112	14,987	5,463	15,890	15,594	303,644	York.
						The Province:
249,099	717,453	291,377	413,219	363,758	10,389,852	1921
245,706	745,038	267,883	395,238	311,652	10,030,872	1920
260,204	773,932	327,802	426,663	377,838	10,573,506	1919
257,272	761,407	376,609	412,214	392,001	11,100,281	1918
.....	.....	439,215	389,659	480,263	12,297,155	1917

LIVE STOCK AND POULTRY

TABLE XXII.—Showing by County Municipalities the numbers of the various comparative totals for the

Counties and Districts.	Horses Sold				Cattle Sold		
	Stallions 2 yrs. old and over.	Mares 2 yrs. old and over.	Geldings 2 yrs. old and over.	Colts and Fillies under 2 yrs.	Bulls for breeding.	Milch Cows.	Calves under 1 year.
Algoma	2	163	151	28	93	854	1,391
Brant	17	404	371	70	359	2,226	4,104
Bruce	22	1,481	1,063	298	531	3,639	2,210
Carleton	24	743	652	143	968	4,835	11,211
Dufferin	18	590	485	83	272	1,653	1,052
Dundas	16	412	332	55	686	3,738	8,929
Durham	11	675	568	91	454	2,311	2,963
Elgin	17	856	896	112	771	5,085	7,682
Essex	17	1,153	726	108	520	3,131	6,252
Frontenac	5	442	273	90	912	3,698	7,865
Glengarry	4	365	352	61	680	3,292	10,502
Grenville	3	317	244	61	661	3,515	7,259
Grey	39	1,427	1,173	277	708	4,765	3,594
Haldimand	9	560	412	95	319	2,062	3,684
Haliburton	2	129	70	31	85	461	726
Halton	6	402	291	43	327	2,110	2,808
Hastings	24	816	609	131	1,329	6,050	14,855
Huron	31	1,843	1,699	312	703	4,436	3,571
Kent	29	1,297	1,082	167	443	3,418	3,579
Lambton	31	1,351	1,115	209	459	3,951	3,770
Lanark	12	465	416	99	476	2,864	4,562
Leeds	14	402	260	58	897	5,063	8,957
Lennox and Add	6	454	305	40	674	2,628	6,668
Lincoln	16	404	297	41	323	1,630	3,298
Manitoulin	4	112	106	28	73	423	262
Middlesex	29	1,804	1,465	198	981	6,622	10,735
Muskoka	9	167	165	42	121	921	1,362
Nipissing	6	131	72	24	235	897	793
Norfolk	11	602	422	99	610	3,792	7,555
Northumberland	18	691	558	116	870	3,762	7,318
Ontario	9	1,000	791	111	694	3,155	3,765
Oxford	16	1,043	933	140	1,122	7,360	14,646
Parry Sound	7	224	167	63	170	1,021	1,053
Peel	13	806	539	99	381	3,280	4,867
Perth	13	1,186	1,048	207	727	4,617	6,487
Peterborough	11	575	415	67	423	2,443	4,127
Prescott	11	385	395	75	956	3,479	7,145
Prince Edward	6	324	226	39	497	2,027	5,647
Rainy R. and Kenora	7	107	90	30	88	750	607
Renfrew	23	656	516	141	802	2,948	3,301
Russell	6	381	250	47	677	3,298	7,376
Simcoe	36	1,517	1,258	230	811	4,876	4,647
Stormont	2	316	198	59	586	3,148	8,524
Sudbury	3	199	127	21	318	1,113	2,054
Thunder Bay	3	85	107	15	86	802	1,166
Timiskaming	8	175	144	20	131	772	647
Victoria	7	702	530	112	344	2,092	1,869
Waterloo	7	643	550	110	409	2,989	3,962
Welland	4	402	289	50	312	1,762	4,477
Wellington	32	1,186	998	172	656	4,000	3,538
Wentworth	7	537	410	72	382	2,409	5,349
York	16	1,222	1,082	129	860	4,927	10,041
The Province:							
1921	699	34,329	27,693	5,219	27,972	157,100	264,812
1920	727	38,085	31,429	6,307	30,177	176,783	266,353
1919	645	39,814	31,544	6,351	29,983	183,250	260,399
1918	347	41,352	32,566	6,719	28,429	166,963	222,578

SOLD OR SLAUGHTERED.

classes of Live Stock and Poultry sold or slaughtered in the year ending June 15, 1921, with Province for four years.

or slaughtered.		Poultry sold or killed.				Counties and Districts.
Steers 2 yrs. old and over.	All other Cattle.	Turkeys.	Geese.	Ducks.	Other Fowl.	
992	1,203	1,907	1,411	733	29,633	Algoma.
3,058	2,908	612	4,514	3,740	62,310	Brant.
14,363	10,972	12,966	15,359	20,494	152,738	Bruce.
5,937	5,241	9,638	16,867	11,242	142,555	Carleton.
6,260	4,319	2,183	12,658	8,655	62,053	Dufferin.
77	1,383	6,822	6,215	4,693	65,729	Dundas.
5,402	4,985	2,520	10,507	9,951	97,819	Durham.
6,006	6,133	10,235	9,123	10,664	147,685	Elgin.
3,144	3,560	11,076	16,927	19,701	225,874	Essex.
1,960	3,901	12,755	4,418	5,893	72,322	Frontenac.
278	1,878	13,163	2,404	1,636	65,784	Glengarry.
133	1,641	5,601	4,864	3,410	61,546	Grenville.
18,287	13,043	10,075	21,424	24,170	174,241	Grey.
3,927	3,807	5,709	5,453	7,577	90,542	Haldimand.
884	1,175	1,285	486	300	12,988	Haliburton.
3,448	3,055	2,095	7,134	4,718	71,091	Halton.
2,620	6,488	9,454	7,599	7,211	120,935	Hastings.
17,113	13,948	9,333	19,490	31,953	213,404	Huron.
8,315	5,601	10,435	17,472	22,206	208,706	Kent.
13,536	12,202	27,308	18,495	20,272	196,019	Lambton.
6,545	6,000	6,552	3,319	2,701	74,705	Lanark.
901	2,842	10,012	4,115	5,845	78,567	Leeds.
2,483	3,575	6,253	3,048	4,441	78,531	Lennox and Add.
1,126	2,026	3,329	2,660	4,321	86,500	Lincoln.
1,785	1,232	2,561	1,263	1,167	13,053	Manitoulin.
15,260	16,682	23,003	17,843	31,531	243,869	Middlesex.
1,247	1,499	839	801	1,107	28,118	Muskoka.
1,124	1,250	233	889	634	20,727	Nipissing.
1,286	2,797	4,857	4,431	6,766	113,282	Norfolk.
3,464	5,382	8,072	6,510	8,186	110,952	Northumberland.
8,369	7,339	3,771	14,950	15,172	127,120	Ontario.
5,508	6,367	2,037	9,252	12,140	143,698	Oxford.
2,218	2,332	1,490	1,442	1,422	29,156	Parry Sound.
4,022	3,575	3,085	13,480	10,053	91,230	Peel.
9,744	9,000	2,710	17,197	22,063	146,549	Perth.
4,260	3,979	7,782	6,106	4,012	69,957	Peterborough.
417	3,279	8,488	2,787	2,705	65,992	Prescott.
287	1,414	5,193	2,005	3,926	49,698	Prince Edward.
821	1,061	2,102	769	438	17,347	Rainy R.and Ken.
8,766	6,854	6,626	8,776	3,530	94,930	Renfrew.
711	2,297	1,185	4,858	3,004	59,597	Russell.
12,974	10,640	13,421	25,385	16,938	195,958	Simcoe.
110	948	7,082	3,022	2,578	61,614	Stormont.
907	1,210	1,239	1,176	307	26,823	Sudbury.
134	521	410	656	925	15,407	Thunder Bay.
428	1,012	434	532	1,847	18,313	Timiskaming.
7,294	5,696	4,847	10,815	7,806	78,994	Victoria.
7,443	5,466	426	5,984	6,340	87,789	Waterloo.
1,607	2,636	1,664	2,915	6,470	91,360	Welland.
13,770	11,262	2,353	19,337	14,470	141,800	Wellington.
2,626	3,652	1,240	4,821	7,296	94,852	Wentworth.
5,315	4,769	4,853	16,760	22,873	178,032	York.
						The Province:
248,692	246,037	313,321	420,724	452,233	5,008,494	1921.
272,240	273,217	331,251	427,871	467,616	5,027,099	1920
287,452	279,129	351,123	431,807	483,792	5,167,971	1919
273,675	241,046	344,773	459,913	514,125	5,197,649	1918

FARM PROPERTY, IMPLEMENTS AND LIVE STOCK.

TABLE XXIII.—Showing by County Municipalities of Ontario the value of farm lands, buildings, implements and live stock for the year 1921, together with the totals for the Province for the past five years.

Counties and Districts.	Land.	Buildings.	Implements.	Live Stock on hand.	Total.
	$	$	$	$	$
Algoma	4,817,997	1,926,990	759,258	1,073,044	8,577,289
Brant	11,463,069	7,014,516	2,280,457	2,839,574	23,597,616
Bruce	28,644,689	16,288,517	4,999,743	7,770,209	57,703,158
Carleton	24,659,314	12,194,365	4,316,485	5,738,342	46,908,506
Dufferin	11,464,839	8,145,273	2,220,175	3,888,414	25,718,701
Dundas	10,885,910	6,686,251	2,689,752	3,186,730	23,448,643
Durham	13,483,723	8,800,205	2,755,486	4,024,584	29,063,998
Elgin	23,053,268	13,266,130	4,189,473	5,778,295	46,287,166
Essex	38,883,196	16,954,735	5,347,674	5,736,647	66,922,252
Frontenac	10,129,920	5,600,850	2,070,898	3,135,362	20,937,030
Glengarry	12,768,019	6,154,970	2,481,142	2,838,276	24,242,407
Grenville	7,003,931	4,733,082	1,716,719	2,348,362	15,802,094
Grey	30,597,495	21,069,834	6,309,267	9,647,326	67,623,922
Haldimand	12,174,198	7,915,616	2,709,453	3,213,466	26,012,733
Haliburton	1,715,105	756,065	315,172	541,710	3,328,052
Halton	13,780,164	7,548,492	2,152,120	2,852,259	26,333,035
Hastings	18,528,332	11,033,637	4,361,318	5,722,806	39,646,093
Huron	32,874,045	20,515,863	6,410,425	9,949,972	69,750,305
Kent	43,729,920	18,851,418	6,538,663	7,345,710	76,465,711
Lambton	32,619,553	16,539,833	5,613,768	7,992,512	62,765,666
Lanark	11,486,441	6,180,644	2,303,831	3,603,480	23,574,396
Leeds	12,374,015	7,549,452	2,761,570	3,855,036	26,540,073
Lennox and Add	10,653,880	6,548,341	2,588,893	3,199,573	22,990,687
Lincoln	18,185,097	8,334,131	2,486,936	2,165,162	31,171,326
Manitoulin	2,779,991	1,170,088	539,212	944,337	5,433,628
Middlesex	42,344,220	23,528,044	7,527,002	11,085,361	84,484,627
Muskoka	3,585,259	1,927,176	788,032	1,123,964	7,424,431
Nipissing	3,302,326	1,543,050	746,727	981,407	6,573,510
Norfolk	14,187,593	9,131,044	3,152,672	3,825,869	30,297,178
Northumberland	14,211,362	9,497,976	3,174,473	4,436,772	31,320,583
Ontario	20,192,380	12,689,899	3,937,375	6,014,279	42,833,933
Oxford	25,777,512	16,632,023	5,357,486	7,710,833	55,477,854
Parry Sound	3,915,356	1,959,958	834,200	1,600,235	8,309,749
Peel	15,820,042	10,237,892	2,948,954	3,782,689	32,789,577
Perth	24,573,053	17,600,853	5,231,940	7,459,440	54,865,286
Peterborough	12,529,718	7,237,348	2,343,702	3,032,907	25,143,675
Prescott	13,539,151	7,747,506	2,571,050	2,670,442	26,528,149
Prince Edward	8,428,236	5,753,217	2,097,044	2,238,113	18,516,610
Rainy R. and Kenora	4,043,587	1,194,680	596,721	877,027	6,712,015
Renfrew	18,077,690	8,655,679	3,392,752	4,851,415	34,977,536
Russell	11,570,746	5,630,595	1,889,490	2,473,453	21,564,284
Simcoe	32,993,205	21,394,130	6,785,814	10,134,449	71,307,598
Stormont	9,187,775	5,798,864	2,172,335	2,472,135	19,631,109
Sudbury	4,188,719	1,583,136	825,760	1,154,071	7,751,686
Thunder Bay	5,158,431	1,428,066	625,672	621,902	7,834,071
Timiskaming	5,677,802	1,209,820	702,813	803,024	8,393,459
Victoria	14,919,342	7,486,246	2,789,162	4,179,372	29,374,122
Waterloo	16,077,012	10,774,833	2,985,984	4,217,654	34,055,483
Welland	12,297,355	7,180,611	2,320,852	2,491,893	24,290,711
Wellington	23,801,842	17,558,970	4,865,389	7,810,236	54,036,437
Wentworth	18,569,667	9,491,197	2,949,030	3,424,738	34,434,632
York	33,574,567	17,536,786	5,383,550	7,258,817	63,753,720
The Province:					
1921	851,300,059	484,188,897	159,913,871	218,123,685	1,713,526,512
1920	861,116,234	467,010,867	153,780,378	326,737,337	1,808,644,816
1919	848,767,153	426,649,086	137,310,618	339,607,932	1,752,334,789
1918	819,164,298	380,244,880	109,896,874	324,107,476	1,633,413,528
1917	807,426,986	370,384,055	104,581,053	289,676,977	1,572,069,071

PART II—CHATTEL MORTGAGES

Table showing by County Municipalities of Ontario the total number and amount of Chattel Mortgages on record and undischarged on December 31st, 1921, against (1) all occupations; (2) farmers; together with totals for the Province for the past five years.

Counties and Districts	Chattel mortgages against all occupations.				Chattel mortgages against farmers.			
	To secure existing debt.		For future indorsation.		To secure existing debt.		For future indorsation.	
	No.	Amount.	No.	Amount.	No.	Amount	No.	Amount.
		$		$		$		$
Algoma	167	195,764	.....	.....	71	49,771	.....	.....
Brant	129	275,849	.....	.....	54	60,368	.....	.....
Bruce	155	119,033	.....	.....	94	60,301	.....	.....
Carleton	324	351,047	.....	.....	29	53,862	.....	.....
Dufferin	43	84,553	.....	.....	27	18,286	.....	.....
Elgin	215	403,646	.....	.....	99	91,457	.....	.....
Essex	323	439,909	.....	.....	103	95,194	.....	.....
Frontenac	216	200,434	.....	.....	130	95,744	.....	.....
Grey	245	262,160	.....	.....	153	101,851	.....	.....
Haldimand	75	67,077	.....	.....	34	29,401	1	170
Haliburton	19	33,847	.....	.....	15	5,862	.....	.....
Halton	46	83,373	.....	.....	22	62,371	.....	.....
Hastings	357	706,196	.....	.....	174	107,454	.....	.....
Huron	108	156,300	1	20,000	56	71,270	.....	.....
Kenora	53	146,323	1	500	17	6,843	.....	.....
Kent	253	356,928	16	102,891	142	114,814	7	28,365
Lambton	138	143,313	.....	.....	37	23,063	.....	.....
Lanark	96	96,311	.....	.....	38	35,946	.....	.....
Leeds and Grenville	223	199,082	.....	.....	152	131,000	.....	.....
Lennox and Add	93	190,636	.....	.....	54	36,118	.....	.....
Lincoln	126	177,556	.....	.....	38	27,294	.....	.....
Manitoulin	78	124,810	.....	.....	64	26,837	.....	.....
Middlesex	172	233,830	.....	.....	40	45,850	.....	.....
Muskoka	127	262,926	2	75,000	55	33,129	.....	.....
Nipissing	232	325,616	.....	.....	122	85,394	.....	.....
Norfolk	113	92,670	.....	.....	80	71,753	.....	.....
Northumberland and Durham	211	370,047	.....	.....	122	79,247	.....	.....
Ontario	142	183,483	.....	.....	77	70,749	.....	.....
Oxford	97	130,928	.....	.....	56	75,310	.....	.....
Parry Sound	121	129,633	2	32,000	61	39,633	.....	.....
Peel	42	68,954	.....	.....	24	32,899	.....	.....
Perth	98	105,851	2	40,376	36	29,227	1	376
Peterborough	119	125,339	.....	.....	50	24,622	.....	.....
Prescott and Russell	148	276,205	.....	.....	91	113,515	.....	.....
Prince Edward	96	109,025	.....	.....	75	69,160	.....	.....
Rainy River	87	78,188	.....	.....	41	35,330	.....	.....
Renfrew	161	191,357	.....	.....	81	91,942	.....	.....
Simcoe	296	312,208	.....	.....	178	140,002	.....	.....
Stormont, Dun. and Glen	222	236,956	16	5,969	141	130,641	6	3,140
Sudbury	399	492,819	.....	.....	238	117,633	.....	.....
Thunder Bay	144	*725,551	.....	.....	40	46,309	.....	.....
Timiskaming	518	438,111	3	1,721	243	20,699	.....	.....
Victoria	52	32,945	4	14,579	29	15,745	.....	.....
Waterloo	127	247,372	.....	.....	40	47,664	.....	.....
Welland	155	166,935	.....	.....	34	14,493	.....	.....
Wellington	122	220,300	.....	.....	57	115,203	.....	.....
Wentworth	364	482,371	.....	.....	51	51,252	.....	.....
York	2,528	3,144,247	.....	.....	78	113,772	.....	.....
The Province:								
1921	10,375	13,998,014	47	293,036	3,743	3,016,280	15	32,051
1920	8,775	12,975,031	36	607,524	3,042	2,698,383	17	22,802
1919	8,350	15,402,519	40	1,357,875	3,457	2,439,536	12	10,926
1918	8,172	23,241,853	44	2,887,706	3,773	2,310,396	17	9,929
1917	9,252	24,978,609	43	296,116	4,265	2,321,701	17	7,290

In 1920 and 1921 instruments known as "Trust Deeds" to secure Bond issues have not been included as was the case in some counties in previous years. One such instrument filed in Sudbury in 1921 amounted to $20,000,000.

* Including 3 ranchers for $445,325,

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